

**United States Court of Appeals
for the Federal Circuit**

THE DOW CHEMICAL COMPANY,
Plaintiff-Cross-Appellant

v.

**NOVA CHEMICALS CORPORATION (CANADA),
NOVA CHEMICALS INC. (DELAWARE),**
Defendants-Appellants

2014-1431, 2014-1462

Appeals from the United States District Court for the District of Delaware in No. 1:05-cv-00737-LPS, Chief Judge Leonard P. Stark.

Decided: August 28, 2015

HARRY J. ROPER, Jenner & Block LLP, Chicago, IL, argued for plaintiff-cross-appellant. Also represented by, AARON A. BARLOW, PAUL DAVID MARGOLIS; RAYMOND N. NIMROD, GREGORY D. BONIFIELD, WILLIAM ADAMS, CLELAND B. WELTON, II, Quinn Emanuel Urquhart & Sullivan, LLP, New York, NY.

DONALD ROBERT DUNNER, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Washington, DC, argued for defendants-appellants. Also represented by

MARK J. FELDSTEIN, RONALD BLEEKER, DARREL
CHRISTOPHER KARL.

Before PROST, *Chief Judge*, DYK and WALLACH, *Circuit Judges*.

DYK, *Circuit Judge*.

The Dow Chemical Company (“Dow”) filed suit against NOVA Chemicals Corporation (Canada) and NOVA Chemicals Inc. (Delaware) (collectively, “NOVA”), alleging infringement of claims of U.S. Patent No. 5,847,053 (the “053 patent”) and U.S. Patent No. 6,111,023 (the “023 patent”). A jury found the asserted claims to be infringed and not invalid. NOVA appealed, and we affirmed, holding, *inter alia*, that the asserted claims were not indefinite. Our mandate issued, and NOVA’s petition for certiorari was denied by the Supreme Court, *NOVA Chems. Corp. v. Dow Chem. Co.*, 133 S. Ct. 544 (2012). The district court subsequently conducted a bench trial for the supplemental damages period through the expiration date of both patents. The district court granted supplemental damages in the form of lost profits and reasonable royalties and denied Dow’s request for enhanced damages. NOVA appealed, and Dow cross-appealed.

Subsequently, the Supreme Court decided *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014), altering the standard for indefiniteness. We consider here only whether, under *Nautilus*, the supplemental damages award must be reversed because the claims are indefinite.

NOVA does not request that we reopen our previous judgment as to the infringement trial.¹

We hold that the intervening change in the law of indefiniteness resulting from *Nautilus* provides an exception to the doctrine of law of the case or issue preclusion. In our review of the supplemental damages award, we therefore evaluate the indefiniteness of the claims under the *Nautilus* standard. In reviewing the supplemental damages award under the *Nautilus* standard, we hold that the claims are indefinite and reverse the award of supplemental damages.

BACKGROUND

On October 21, 2005, Dow filed suit against NOVA, alleging infringement of claims of the '053 patent and the '023 patent. The asserted claims of both patents cover ethylene polymer compositions (a type of plastic) with, *inter alia*, improved modulus, yield strength, impact strength, and tear strength. These polymers can be made into films that can be down-gauged (made thinner) without losing strength. The claims at issue are independent claim 6² and dependent claims 7, 10, and 12 of the '053

¹ NOVA did attack that judgment in a separate case, alleging fraud and fraud on the court. We affirmed the district court's dismissal of NOVA's complaint. *See NOVA Chems. Corp. v. Dow Chem. Co.*, No. 2015-1257, 2015 WL 3555764 (Fed. Cir. June 9, 2015); Transcript of Hearing on Motion to Dismiss at 56, *NOVA Chems. Corp. v. Dow Chem. Co.*, No. 13-1601-LPS (D. Del. July 29, 2014).

² Claim 6 is representative and provides:

6. An ethylene polymer composition comprising (A) from about 10 percent (by weight of the total composition) to about 95 percent (by weight of the

patent; and independent claim 1³ and dependent claims 2, 5, and 8 of the '023 patent. Both patents expired on October 15, 2011.

total composition) of at least one homogeneously branched linear ethylene/ α -olefin interpolymer having:

- (i) a density from about 0.89 grams/cubic centimeter (g/cm^3) to about 0.935 g/cm^3 ,
 - (ii) a molecular weight distribution (M_w/M_n) from about 1.8 to about 2.8,
 - (iii) a melt index (I_2) from about 0.001 grams/10 minutes ($\text{g}/10 \text{ min}$) to about 10 $\text{g}/10 \text{ min}$,
 - (iv) no high density fraction,
 - (v) a single melting peak as measured using differential scanning calorimetry, and
 - (vi) a slope of strain hardening coefficient greater than or equal to 1.3; and
- (B) from about 5 percent (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one heterogeneously branched linear ethylene polymer having a density from about 0.93 g/cm^3 to about 0.965 g/cm^3 .

'053 patent col. 16 ll. 4–25.

³ Claim 1 is representative and provides:

1. An ethylene polymer composition comprising
 - (A) from about 10 percent (by weight of the total composition) to about 95 percent

Relevant here, claim 6 of the '053 patent and claim 1 of the '023 patent, the independent claims, require “a slope of strain hardening coefficient greater than or equal to 1.3.” '053 patent col. 16 ll. 19–20; '023 patent col. 16 ll. 29–30. NOVA argues that the patents are indefinite because they fail to teach a person having ordinary skill in the art how to measure the “slope of strain hardening,”

(by weight of the total composition) of at least one ethylene interpolymer having:

(i) a density from about 0.89 grams/cubic centimeter (g/cm^3) to about 0.935 g/cm^3 ,

(ii) a melt index (I_2) from about 0.001 grams/10 minutes ($\text{g}/10$ min.) to about 10 $\text{g}/10$ min.,

(iii) a slope of strain hardening coefficient greater than or equal to 1.3, and

(iv) a Composition Distribution Branch Index (CDBI) greater than 50 percent; and

(B) from about 5 percent (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one ethylene polymer characterized as having a density from about 0.93 g/cm^3 to about 0.965 g/cm^3 and comprising a linear polymer fraction, as determined using a temperature rising elution fractionation (TREF) technique.

'023 patent col. 15 l. 59–col. 16 l. 39.

which is required to calculate the strain hardening coefficient.

On June 15, 2010, a jury found that NOVA infringed the claims of the asserted patents and that the patents were not invalid for indefiniteness. The jury had been instructed that “[i]f the meaning of the claims is discernible, it is definite, even though the task may be formidable and even if the conclusion may be one over which reasonable persons will disagree.” J.A. 12702. NOVA appealed, arguing, *inter alia*, that the patents were invalid for indefiniteness. *Dow Chem. Co. v. Nova Chems. Corp.*, 458 F. App’x 910, 911, 917–18 (Fed. Cir. 2012). In that previous appeal, on January 24, 2012, we held that the patents were not indefinite. *Id.* at 911, 920. In so holding, we applied the law as then established by our pre-*Nautilus* precedent, including *Exxon Research & Engineering Co. v. United States*, 265 F.3d 1371 (Fed. Cir. 2001). *See Dow*, 458 F. App’x at 917–20.

On remand, the district court, *inter alia*, held a bench trial on supplemental damages for the period between January 1, 2010, through October 15, 2011, the date on which the patents expired. On March 28, 2014, the district court granted supplemental damages to Dow in the form of lost profits and reasonable royalties and denied Dow’s request for enhanced damages. Final judgment was entered on April 14, 2014. NOVA appealed on April 23, 2014. Dow cross-appealed on May 1, 2014.

While the appeals were pending, on June 2, 2014, the Supreme Court decided *Nautilus*. In *Nautilus*, the Supreme Court held that our standard for indefiniteness was contrary to 35 U.S.C § 112, and it announced a new standard described in detail below. *See* 134 S. Ct. at 2124. The Court abrogated our previous inquiry into whether the claims were “amenable to construction” or “insolubly ambiguous,” *id.*, which we applied in cases such as *Exxon*, and relied on in the earlier appeal in this case, *Dow*, 458

F. App'x at 917, 919–20. Under the new standard, “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*, 134 S. Ct. at 2124.

On appeal, NOVA argues that (1) the supplemental damages award should be vacated because the patents-in-suit are invalid for indefiniteness after the Supreme Court’s decision in *Nautilus* or (2) in the alternative, the supplemental damages award was not supported by the evidence. In its cross-appeal, Dow contends that the district court erred by not awarding enhanced damages for the supplemental damages period.

We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1). 35 U.S.C. § 112 ¶ 2 provides that “[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112 (2006). Indefiniteness is a question of law that this court reviews de novo. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335, 1341 (Fed. Cir. 2015).

We conclude that our prior decision is not binding on the issue of indefiniteness because *Nautilus* changed the applicable law, our prior decision rested on the earlier law, and the patents-in-suit are invalid for indefiniteness under the new *Nautilus* standard. We do not address the other issues. We reverse the district court’s award of supplemental damages and dismiss the cross-appeal as moot.

DISCUSSION

I

Dow argues that we are bound by our decision in the previous appeal—an appeal from a final judgment under Federal Rule of Civil Procedure 54(b)—that the claims

were not indefinite. While a judgment entered under Rule 54(b) is a final judgment, that final judgment cannot have any greater effect than any other final judgment. The earlier appeal was from the entry of judgment in the jury verdict (for the period March 2002–December 31, 2009) while the current appeal is from the supplemental damages judgment (for the period January 1, 2010–October 15, 2011). An award of supplemental damages is designed to compensate the patentee “for periods of *infringement* not considered by the jury,” *Whitserve, LLC v. Comput. Packages, Inc.*, 694 F.3d 10, 38 (Fed. Cir. 2012) (emphasis added), and necessarily implicates patent validity. In order to prevail on a claim for supplemental damages, a patentee must establish infringement for the supplemental damages period. If “an act that would have been an infringement or an inducement to infringe pertains to a patent that is shown to be invalid, there is no patent to be infringed.” *Commil USA, LLC v. Cisco Sys., Inc.*, 135 S. Ct. 1920, 1929 (2015).

The doctrine of claim preclusion does not apply as between the claims for the first and second damages periods. It is well-established that, as to claims for continuing conduct after the complaint is filed, each period constitutes a separate claim.⁴ See 18 Charles Alan Wright,

⁴ Likewise, claims that have accrued at the time of the complaint generally must be brought together, and the plaintiff need not supplement the complaint to cover continuing conduct. 18 Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4409 (2d ed. 2002) (“Most cases rule that an action need include only the portions of the claim due at the time of commencing that action, frequently observing that the opportunity to file a supplemental complaint is not an obligation.”); see also, e.g., *Gillig v. Nike, Inc.*, 602 F.3d

Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4409 (2d ed. 2002) (“A substantially single course of activity may continue through the life of a first suit and beyond. The basic claim-preclusion result is clear: a new claim or cause of action is created as the conduct continues.”); *Crowe v. Leeke*, 550 F.2d 184, 187 (4th Cir. 1977) (“We glean from the[] cases that res judicata [claim preclusion] has very little applicability to a fact situation involving a continuing series of acts, for generally each act gives rise to a new cause of action.”); *Exhibitors Poster Exchange, Inc. v. Nat’l Screen Serv. Corp.*, 421 F.2d 1313, 1316, 1318–19 (5th Cir. 1970) (res judicata [claim preclusion] does not apply where plaintiff alleges “same facts—[a] 1961 refusal to deal [as an anti-trust violation]”—but sought in a second and third suit to recover damages suffered since losing on summary judgment in the first suit since the damages arose from “non actions” subsequently occurring).

This rule applies to patent infringement claims. As we explained just last year,

traditional notions of claim preclusion do not apply when a patentee accuses new acts of infringement, i.e., post-final judgment, in a second suit—

1354, 1363 (Fed. Cir. 2010) (res judicata [claim preclusion] does not apply where claims accrue during action and are not the subject of the first judgment because “the doctrine of res judicata does not punish a plaintiff for exercising the option not to supplement the pleadings with an after-acquired claim” (citations omitted)); *Spiegel v. Cont’l Ill. Nat’l Bank*, 790 F.2d 638, 646 (7th Cir. 1986) (claim preclusion barred suit except for claims related to two new acts which “occurred after the filing” of the earlier suit).

even where the products are the same in both suits. Such claims are barred under general preclusion principles only to the extent they can be barred by issue preclusion, with its attendant limitations.

Brain Life, LLC v Elekta Inc., 746 F.3d 1045, 1056 (Fed. Cir. 2014); *see Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1342–44 (Fed. Cir. 2012); *see also, e.g., SynQor, Inc. v. Artesyn Techs., Inc.*, 709 F.3d 1365, 1385–86 (considering whether intent element of induced infringement had been shown in the supplemental damages period).

Here, the bulk of the supplemental damages accrued after the Rule 54(b) judgment, and it is clear that claim preclusion also does not apply to damages accruing after the filing of the complaint and not the subject of the first judgment. *See* note 4, *supra*. All supplemental damages here accrued after the filing of the complaint.

While claim preclusion does not apply, ordinarily issue preclusion (or law of the case) would bar relitigation in the supplemental damages period of issues (such as validity) that were resolved as to the earlier time periods. 18 Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4409 (2d ed. 2002 (“[Although] claim preclusion often cannot apply in settings of continuing . . . conduct, . . . it may be proper to conclude that the issues precluded by the first litigation embrace [issues in the second] . . .”). That would be the case whether the supplemental damages proceeding were viewed as a continuation of the ongoing case or as a new proceeding.⁵ In the former event, the doctrine of law of

⁵ Because Dow does not seek to reopen the infringement trial judgment, Dow’s arguments that we lack

the case would preclude relitigation. In the latter event (treating the supplemental damages proceeding as a new proceeding) issue preclusion would bar relitigation. “[T]he doctrine [of law of the case] posits that when a court decides upon a rule of law, that decision should continue to govern the same issues in *subsequent stages in the same case*.” *Christianson v. Colt Indus. Operating Corp.*, 486 U.S. 800, 815–16 (1988) (quoting *Arizona v. California*, 460 U.S. 605, 618 (1983)) (emphasis added) (alterations in original). Issue preclusion “bars ‘successive litigation of an issue of fact or law already litigated and resolved in a valid court determination essential to the *prior judgment*.’” *Taylor v. Sturgell*, 553 U.S. 880, 892 (2008) (quoting *New Hampshire v. Maine*, 532 U.S. 742, 748–49 (2001)) (emphasis added).⁶ But both doctrines are

jurisdiction on the indefiniteness issue are without merit. The cases that Dow cites relate to situations where a party sought to reopen a previous judgment. *See Brown v. Eli Lilly & Co.*, 654 F.3d 347, 354–55 (2d Cir. 2011) (holding that court was without jurisdiction to consider appeal as to two parties because the judgment against one party was appealed but the appeal was dismissed as untimely and the judgment against the other party was not appealed); *In re Martin*, 400 F.3d 836, 841 & n.1 (10th Cir. 2005) (appeal limited to later order because earlier order was a final judgment and that judgment was not appealed); *Crowder v. Telemedia, Inc.*, 659 F.2d 787, 787–88 (7th Cir. 1981) (per curiam) (holding that court lacked jurisdiction over previous judgment that had become final and had not been timely appealed).

⁶ While we apply the law of the regional circuit to general procedural questions, we apply this court’s precedent to questions implicating substantive issues of patent law or issues implicating the scope of our own previous decisions. *See Sovereign Software LLC v. Victoria’s Secret*

subject to an exception—when governing law is changed by a later authoritative decision. *See* 18B Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4478 (2d ed. 2002) (law of the case); 18 Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4425 (2d ed. 2002) (issue preclusion).

With respect to law of the case, “[p]erhaps the most obvious justifications for departing . . . arise when there has been an intervening change of law outside the confines of the particular case.” 18B Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4478; *see Rose Acre Farms, Inc. v. United States*, 559 F.3d 1260, 1277–78 (Fed. Cir. 2009) (holding that intervening Supreme Court decision issued after prior appeal rendered prior decision “obsolete,” “[g]iven the significant change in the law”); *Wopsock v. Natchees*, 454 F.3d 1327, 1333 (Fed. Cir. 2006) (finding that law of the case did not apply because “this is a case in which there has been a change in the law”). The exception applies even if the issue was resolved on appeal in an earlier stage of the proceeding. Indeed, the premise of the exception in the appellate context is that there was such an earlier resolution. *See Litton Sys., Inc. v. Honeywell Inc.*, 238 F.3d 1376, 1379–81 (Fed. Cir. 2001) (revisiting prior holding on prosecution history estoppel because intervening en banc authority adopted a contrary approach, noting “[w]e are aware of no decision of this court that has applied the law of the case in the face of a relevant change in controlling legal authority”); *Mendenhall v. Barber-Greene Co.*, 26 F.3d 1573, 1576, 1580, 1583

Direct Brand Mgmt., LLC, 778 F.3d 1311, 1314 (Fed. Cir. 2015). We therefore apply our own law where, as here, we are interpreting our own prior decision.

(Fed. Cir. 1994) (holding that an exception to law of the case applied and the asserted claims were invalid, revisiting a previous final decision that the claims were not invalid); *see also United States v. Plugh*, 648 F.3d 118, 121–24 (2d Cir. 2011) (revisiting holding on first appeal due to intervening Supreme Court precedent); *Spiegla v. Hull*, 481 F.3d 961, 963–67 (7th Cir. 2007) (holding that “because the judgment in this case is not yet final, we are obliged to reevaluate” a previous appellate holding under intervening Supreme Court precedent); *United States v. Windom*, 82 F.3d 742, 746, 748–49 (7th Cir. 1996), *vacated on other grounds*, 103 F.3d 523 (7th Cir. 1996) (holding that defendant was “not foreclosed from re-raising” merits of conviction previously affirmed where an intervening Supreme Court decision was issued after remand for sentencing); *United States v. Garcia*, 77 F.3d 274, 276–77 (9th Cir. 1996) (reconsidering affirmance of conviction *sua sponte* in light of intervening authority after an earlier remand “for the limited purpose of reimposing the mandatory” sentence). But the exception of course does not apply if the proceeding has reached the stage of final judgment. *See Mendenhall*, 26 F.3d at 1582 (Fed. Cir. 1994). Here, the supplemental damages proceeding had not been concluded at the time of *Nautilus*.

Similarly, issue preclusion does not apply where “a new determination is warranted in order to take account of an intervening change in the applicable legal context or otherwise to avoid inequitable administration of the laws.” Restatement (Second) of Judgments § 28(2) (1982). Therefore, a court is not bound by a previous decision where there is a change in the controlling precedent. 18 Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4425 (“Preclusion is most readily defeated by specific Supreme Court overruling of precedent relied upon in reaching the first decision.”); *see Bobby v. Bies*, 556 U.S. 825, 836 (2009) (“[E]ven if the core requirements for issue preclusion had

been met, an exception to the doctrine's application would be warranted due to this Court's intervening decision"); *Bingaman v. Dep't of Treasury*, 127 F.3d 1431, 1438 (Fed. Cir. 1997) ("In a number of cases, this court and others have held that a significant change in the 'legal atmosphere'—whether in the form of new legislation, a new court decision, or even a new administrative ruling—can justify a later court's refusal to give collateral estoppel effect to an earlier decision."); *Wilson v. Turnage*, 791 F.2d 151, 156–57 (Fed. Cir. 1986) (holding that issue preclusion did not apply where Federal Circuit decision was "such an intervening change in the legal atmosphere that it renders the bar of collateral estoppel inapplicable in this case"); *see also Comm'r of Internal Revenue v. Sunnen*, 333 U.S. 591, 600 (1948) ("[A] supervening decision cannot justly be ignored by blind reliance upon the rule of collateral estoppel").

The change in law exception applies whether the change in law occurs while the case is before the district court or while the case is on appeal. *See Spiegla*, 481 F.3d at 964 (7th Cir. 2007) (holding that defendants had not waived challenge to holding in first appeal where issue not raised on remand in district court or initial briefing because intervening decision was issued after appellate briefing); *Mendenhall*, 26 F.3d at 1583 (law of the case did not apply where new decision issued while case on appeal); *Morris v. Am. Nat'l Can Corp.*, 988 F.2d 50, 51–53 (8th Cir. 1993) (law of the case did not apply where, after first appeal and decision on remand by district court, Supreme Court case changed prevailing law); *Wilson*, 791 F.2d at 154, 157 (exception to issue preclusion applied where intervening decision issued while case pending before this court).

Three conditions must be satisfied to reopen a previous decision under the change of law exception for both law of the case and issue preclusion. First, the governing law must have been altered. *See* 18 Charles Alan Wright,

Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4425 (2d ed. 2002) (exception to issue preclusion only available as a result of “independent changes” in the law and not “merely because the defeated party wishes to reargue the law”); 18B Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, *Federal Practice and Procedure* § 4478 (2d ed. 2002) (“The easiest cases [for departing from law of the case] occur when the law has been changed by a body with greater authority on the issue . . .”).

Second, the decision sought to be reopened must have applied the old law. *See, e.g., Litton*, 238 F.3d at 1380 (holding that intervening law exception to law of the case applied where previous opinion had followed approach expressly repudiated by intervening en banc decision); *Rose Acre Farms*, 559 F.3d at 1278 (intervening law exception applied where prior opinion had “clearly applied the [old] test”).

Third, the change in law must compel a different result under the facts of the particular case. *See Hughes Aircraft Co. v. United States*, 140 F.3d 1470, 1475 (Fed. Cir. 1998), *overruled on other grounds by Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558 (Fed. Cir. 2000) (rejecting argument that issue should be reopened because the “analysis performed in [the previous appeal] satisfies the . . . rule as stated in [an intervening Supreme Court decision]”); *Hughes Aircraft Co. v. United States*, 86 F.3d 1566, 1576 (Fed. Cir. 1996), *cert. granted, judgment vacated on other grounds*, 520 U.S. 1183 (1997) (holding that intervening law exception to law of the case did not apply where “analysis in the court’s prior decision is . . . entirely consistent” with intervening en banc decisions); *Cal. Fed. Bank v. United States*, 395 F.3d 1263, 1274–75 (Fed. Cir. 2005) (holding that intervening en banc decision did not warrant reopening previous decision because principles of en banc decision did not apply on the facts of the case on appeal). Here, as the Supreme Court

recognized in *Nautilus*, the Supreme Court’s new standard does not always lead to a different result. 134 S. Ct. at 2130–31 (remanding for consideration of whether claims were definite under the new standard).

Each of these requirements was satisfied here.

First, there can be no serious question that *Nautilus* changed the law of indefiniteness. This was indeed the very purpose of the *Nautilus* decision. Prior to *Nautilus*, we applied the following test:

[W]hat we have asked is that the claims be amenable to construction, however difficult that task may be. If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, we have held the claim indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds.

Exxon, 265 F.3d at 1375. In *Nautilus*, the Supreme Court expressly rejected that “insolubly ambiguous” or “amenable to construction” standard. *Nautilus*, 134 S. Ct. at 2124. Rather, the Court “h[e]ld that 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.” *Id.* The Court explained further: “[i]t cannot be sufficient that a court can ascribe *some* meaning to a patent’s claim; the definiteness inquiry trains on the understanding of a skilled artisan at the time of the patent application, not that of a court viewing matters *post hoc*.” *Id.* at 2130.

Nautilus emphasizes “the definiteness requirement’s public-notice function.” 134 S. Ct. at 2130; *see also id.* at 2129 (“[A] patent must be precise enough to afford clear

notice of what is claimed, thereby ‘appris[ing] the public of what is still open to them’” (quoting *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996)) (alterations in original). Although the Court recognized that “[s]ome modicum of uncertainty” may be tolerated, *id.* at 2128, the patent and prosecution history must disclose a single known approach or establish that, where multiple known approaches exist, a person having ordinary skill in the art would know which approach to select. *See Teva*, 789 F.3d at 1341, 1344–45 (holding claim indefinite where molecular weight could be measured three different ways and would yield different results and the patent and prosecution history did not provide guidance as to which measure to use). Particularly this is so where different approaches to measurement are involved. *See id.* at 1341, 1344–45. Thus, contrary to our earlier approach, under *Nautilus*, “[t]he claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Nautilus*, 134 S. Ct. at 2130 & n.8).

Second, there is also no question that our original decision applied pre-*Nautilus* law. Dow argues that our opinion in the previous appeal was not inconsistent with *Nautilus* and that we did not apply the “amenable to construction” or “insolubly ambiguous standard.” But the fact that we did not include that particular language does not mean that we were not applying the prevailing legal standard. We cited *Exxon*, *see Dow*, 458 F. App’x at 917, which *Nautilus* specifically cited as exemplary of the rejected Federal Circuit standard. *See Nautilus*, 134 S. Ct. at 2130 n.9. Applying *Exxon*, we explained that a patent is definite under § 112 ¶ 2 if:

“one skilled in the art would understand the bounds of the claim when read in light of the specification.” A claim is not indefinite merely because it is difficult to construe. To be indefinite, a claim

term must be such that “no narrowing construction can properly be adopted” to interpret the claim.

Dow, 458 F. App’x at 917 (quoting *Exxon*, 265 F.3d at 1375). We also explained that “the test for indefiniteness is not whether the scope of the patent claims is easy to determine, but whether ‘the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree.’” *Id.* at 920 (quoting *Exxon*, 265 F.3d at 1375). This language corresponds exactly to the “amenable to construction” or “insolubly ambiguous” standard rejected in *Nautilus*.

Third, as we now discuss, our original decision would have been different under the new *Nautilus* standard.

II

The claim term at issue here provides for “a slope of strain hardening coefficient greater than or equal to 1.3.” ’053 patent col. 16 ll. 19–20; ’023 patent col. 16 ll. 29–30. The patents provide that the “slope of strain hardening coefficient” (“SHC”) is calculated according to the following equation:

$$SHC = (\text{slope of strain hardening}) * (I_2)^{0.25}$$

where I_2 =melt index in grams/10 minutes. ’053 patent col. 6 ll. 45–50; ’023 patent col. 7 ll. 22–28. “The SHC coefficient is a new Dow construct, not previously known in the art” *Dow*, 458 F. App’x at 918.

Strain hardening is a property wherein a material becomes harder as it is stretched. The ’053 and ’023 patents teach that tensile properties, including strain hardening, may be tested using a device called the Instron Tensile Tester. The Instron Tensile Tester subjects a sample to an increasing load, stretching it until it breaks. The machine

measures the force, or load, applied to the sample and the length that the sample stretches.

The measurements taken by the Instron Tensile Tester are then plotted on a graph. The resulting curve is called the “tensile curve” or “stress/strain curve.” On the stress/strain curve, the force (or load) applied to the sample is plotted on the y-axis, and the resulting elongation (or displacement) of the sample is plotted on the x-axis. The behavior of the material claimed by the patent changes as it is stretched, and those changes are shown on the stress/strain curve. A figure from the prior art utilized in Dow’s brief illustrates a typical stress/strain curve.

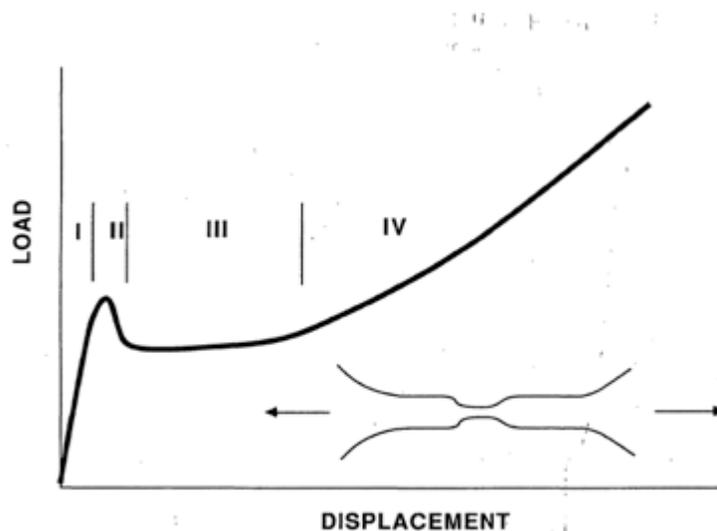


Figure 8. A typical load-displacement curve.

Appellee’s Br. 7; J.A. 10493.

There are three main phases of behavior, corresponding to regions I, III, and IV on the figure. At first, when an increasing force is applied to a sample of the compound claimed by the patent, the sample pulls its initial load

and has little or no elongation. In other words, when an increasing force is initially applied, the sample stretches very little, if at all. This is shown in region I in the figure above. Then, after the sample has been subjected to the initial load, it stretches a relatively large amount in response to little or no increase in force. The portion of the stress/strain curve showing these latter effects is called the “drawing region.” The drawing region has a lower, or relatively flat, slope because the force increases little (or not at all), while the elongation increases significantly. The drawing stage is shown as region III in the figure above.⁷

After the drawing stage, there is a third phase—the strain hardening region—which corresponds to region IV in the figure above. The strain hardening region is the focus of the claim term at issue here. In the strain hardening region, the material hardens, and it stretches much less in response to an increased force than in the drawing region. At first, in the strain hardening region, there is still some drawing effect. As the material continues to stretch, the strain hardening effect increases and the drawing effect decreases. When plotted, the strain hardening region is curved in most instances. Because the strain hardening region is typically curved, it does not have a single slope. Typically, the curve will get steeper as more force is applied.

NOVA argues that the term “slope of strain hardening coefficient,” ’053 patent col. 16 l. 19, is indefinite because the patent fails to teach with reasonable certainty where

⁷ Region II in the figure corresponds to a region where the force decreases and is not relevant here.

and how the “slope of strain hardening” should be measured.⁸

Although the patents state that “FIG. 1 shows the various stages of the stress/strain curve used to calculate the slope of strain hardening,” ’053 patent col. 6 ll. 40–41; ’023 patent col. 7 ll. 18–19, the patents do not contain the FIG. 1 referenced in those passages. Nor do the patents include any other figure showing the stress/strain curve. The specification of the ’053 and ’023 patents teach that “[t]he slope of strain hardening is calculated from the resulting tensile curve by drawing a line parallel to the strain hardening region of the . . . stress/strain curve.” ’053 patent col. 6 ll. 27–29; ’023 patent col. 7 ll. 5–7.

At trial, Dow’s expert Dr. Hsiao testified that “one of ordinary skill in the art would know that the slope of the hardening curve would have to be measured at its maximum value, which reflects the best tensile performance of the material.” *Dow*, 458 F. App’x at 919. We may assume that, as Dr. Hsiao testified and as Dow repeatedly argues, it was known that the maximum slope should be measured.

But three methods existed to determine the maximum slope, each providing, as Dow admits, “*simply a different way of determining the maximum slope.*” Appellee’s Br. 45 (emphasis added). Dow admitted that those three methods “all typically occur at the same place—at the end of the curve where the maximum slope is located.” *Id.* We refer to these methods as the “10% secant tangent method,” “final slope method,” and “most linear method.”

⁸ NOVA also argues that the claim is indefinite because it failed to identify the units for the slope of strain hardening. In light of our disposition we need not reach this issue.

The 10% secant tangent method is taught by a later Dow patent, U.S. Patent No. 6,723,398 (the “398 patent”). Under the 10% secant tangent method, “[t]he slope of strain hardening is conveniently taken as the line representing a 10 percent secant tangent which is calculated from the failure point to the point at 10 percent extension before the failure point (where 10 percent extension before is equal to 90 percent of the total extension or strain).” ’398 patent col. 11 ll. 6–11. In other words, a line is drawn between two points, one at the failure point and one at 10% before the failure point. The slope of that line is then calculated. *See id.* FIG. 2. In the final slope method, the “slope of strain hardening [is] calculated from the slope of [a] tensile curve just prior to break.” J.A. 6662. In the most linear method, “[t]he slope of the strain hardening region (SSH) was measured by manually selecting two points in the most linear part of the [strain hardening] region” and dividing the change in force by the change in elongation. J.A. 6704. The constant slope region closely precedes the breaking point.

For purposes of this case, Dr. Hsiao developed yet another method—of his own invention—to calculate the slope of strain hardening. Dr. Hsiao’s testing produced curves with 1,500 data points representing the force applied to a sample and the sample’s elongation. He then analyzed subsets of fifty data points. For each set of fifty data points, Dr. Hsiao used a computer to apply a linear regression routine to fit a line to the fifty points and calculate a slope of the resulting line. He then selected the highest of those resulting slopes in order to find the maximum slope.

There is no question that each of these four methods may produce different results, i.e., a different slope. Dr. Hsiao testified that the 10% secant tangent method, the final slope method, the most linear method, and the method he invented could produce different results. In comparison to the three other methods, Dr. Hsiao’s meth-

od would produce a higher value. Because the methods do not always produce the same results, the method chosen for calculating the slope of strain hardening could affect whether or not a given product infringes the claims.

Neither the patent claims nor the specification here discusses the four methods or provides any guidance as to which method should be used or even whether the possible universe of methods is limited to these four methods. Nor does either party argue that the prosecution history provides any guidance. Further, Dr. Hsiao did not testify that one of ordinary skill in the art would choose his method over the three known methods. Indeed, he was not even aware of the other methods at the time he did his analysis. He admitted that he applied only his judgment of what a person of ordinary skill would believe and did not interview anyone or cite any references discussing how a person at the time of the patent application would have calculated the slope of strain hardening.

The question is whether the existence of multiple methods leading to different results without guidance in the patent or the prosecution history as to which method should be used renders the claims indefinite. Before *Nautilus*, a claim was not indefinite if someone skilled in the art could arrive at a method and practice that method. *Exxon*, 265 F.3d at 1379. In our previous opinion, relying on this standard, we held that the claims were not indefinite, holding that “the mere fact that the slope may be measured in more than one way does not make the claims of the patent invalid.” *Dow*, 458 F. App’x at 920. This was so because Dow’s expert Dr. Hsiao, a person skilled in the art, had developed a method for measuring maximum slope. *See id.* at 919–20.

Under *Nautilus* this is no longer sufficient. “[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.” 134 S. Ct. at 2124; *see also id.* at 2129 (“[W]e read § 112, ¶ 2 to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.”). Here the required guidance is not provided by the claims, specification, and prosecution history.

In this respect this case is quite similar to our recent decision in *Teva*, decided under the *Nautilus* standard. In *Teva*,⁹ the claim limitation at issue recited the term “molecular weight.” 789 F.3d at 1338. But there were three relevant measures for molecular weight—peak average molecular weight (“ M_p ”), number average molecular weight (“ M_n ”), and weight average molecular weight (“ M_w ”)—where each was calculated in a different manner and each typically had a different value. *Id.* We looked to “the patent record—the claims, specification, and prosecution history—to ascertain if they convey to one of skill in the art with reasonable certainty the scope of the invention claimed.” *Id.* at 1341. Neither the claims nor the specification contained an explicit definition of molecular weight, *id.*, and the prosecution history contained inconsistent statements, *id.* at 1342–1344. Therefore, the claims were indefinite under *Nautilus*. *Id.* at 1344–45. This was so even though the patentee’s expert—like Dr. Hsiao here—testified that someone skilled in the art could determine which method was the most appropriate. *Id.* at 1338, 1341.

⁹ This case was on remand from the Supreme Court, where the Court held that subsidiary factual findings made by a district court in claim construction are reviewed for clear error. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

The claims here are even more clearly indefinite than those in *Teva*. Here, Dr. Hsiao’s chosen method was not even an established method but rather one developed for this particular case. As we held in *Interval Licensing*, a claim term is indefinite if it “leave[s] the skilled artisan to consult the ‘unpredictable vagaries of any one person’s opinion.’” 766 F.3d at 1374 (quoting *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005)).¹⁰ The claims here are invalid as indefinite, and the award of supplemental damages must be reversed. Under these circumstances, we need not address the cross-appeal as to enhanced damages.

APPEAL NO. 2014-1431 REVERSED

APPEAL NO. 2014-1462 DISMISSED AS MOOT

COSTS

Costs to NOVA.

¹⁰ This case is unlike *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1377 (Fed. Cir. 2015). In *Biosig*, we held that the prosecution history, the language of the claims, and the knowledge of one skilled in the art demonstrated that “a skilled artisan would understand the inherent parameters of the invention as provided in the intrinsic evidence” and that the claim term at issue “informs a skilled artisan with reasonable certainty of the scope of the claim.” *Id.* at 1382–84.