Nos. 2014-1431, -1462

IN THE

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.

On Appeal from the United States District Court of Delaware,
Court No. 1:05-cv-00737-LPS,
Honorable Leonard P. Stark, United States District Judge

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CERTIFICATE OF INTEREST

Counsel for Plaintiff-Cross Appellant certifies the following:

1. The full name of every party or amicus represented by me is:

The Dow Chemical Company

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

Not Applicable

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

The Dow Chemical Company is publicly traded. It has no parent corporation, and no publicly held corporation holds 10 percent or more of its stock.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

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STATEMENT OF RELATED CASES

A previous appeal in the same civil action was before this Court as No. 2010-1526, decided January 24, 2012. *Dow Chem. Co. v. Nova Chems. Corp. (Canada)*, 458 F. App'x 910 (Fed. Cir. 2012) (Linn, J., joined by Prost, J.; Reyna, J., dissenting).

This Court's decision in this appeal may affect the result in a separate civil action, captioned *Nova Chemicals Corp. (Canada) et al. v. Dow Chemical Co.*, No. 13-cv-1601 (D. Del.).

PRELIMINARY STATEMENT

By their appeal, Appellants Nova Chemicals Corporation (Canada) and Nova Chemicals Inc. (Delaware) (collectively, "Nova") seek to undo a judgment of the U.S. District Court for the District of Delaware (Stark, J.) in favor of Cross-Appellant The Dow Chemical Company ("Dow"), awarding some $28 million in supplemental damages to compensate Dow for Nova's sustained, concerted, and successful effort to market an infringing "clone" of Dow's patented polyethylene plastic product, ELITE. That effort must fail, for Nova's principal argument on appeal relates not to the supplemental-damages judgment at issue here but to a separate *final* judgment that this Court has already affirmed: In *Dow Chemical Co. v. Nova Chemicals Corp. (Canada)* ("*Dow I*"), 458 F. App'x 910 (Fed. Cir. 2012), this Court affirmed a final judgment entered pursuant to Fed. R. Civ. P. 54(b) that the two Dow patents at issue were valid and infringed, rejecting Nova's assertions that the patents were indefinite and holding that they unambiguously inform persons of ordinary skill in the art of the scope of Dow's claims. Nova's previous two attempts to upset that result—first through meritless *ex parte* reexamination requests, and then through a frivolous independent action in equity—have been rejected, and its third attempt should be rejected as well.

Not only is the district court's determination of validity not properly before this Court—it merged into the Rule 54(b) final judgment that this Court affirmed in

Dow I, not the 2014 supplemental-damages judgment on appeal here—but Nova's indefiniteness challenge goes nowhere on the merits. As Nova acknowledges, this Court's holding in *Dow I* that Dow's patents are not indefinite is at least law of the case, and thus presumptively binding in this subsequent appeal. There has been no intervening change in the law that could justify departure from that holding: While in *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120 (2014), the Supreme Court rejected a standard under which a patent could be upheld so long as it was not "insolubly ambiguous," this Court in *Dow I* did not invoke or apply that test. Instead, consistent with *Nautilus* and the record at trial, this Court held that, to persons of ordinary skill in the art, the claims in Dow's patents have a *single meaning* and thus are *not ambiguous at all*. 458 F. App'x at 917-20. Neither *Nautilus* nor Nova's recycled attacks on this Court's reasoning in *Dow I* undermines that conclusion.

Nova's attempts to overturn the judgment that is properly before this Court—which quantified the supplemental damages—rest on fundamental legal errors. Nova disregards decades of jurisprudence by seeking to turn the lost-profits inquiry from one that looks at the profits the patentee would have made in a hypothetical "but for" world in which the defendant did not infringe, to one limited to what actually happened when the defendant infringed. When that error is corrected, Nova can only quibble with the district court's factual findings and

discretionary determinations following bench trial. But Nova makes no serious argument that the district court erred (let alone clearly erred) in finding that Dow had the capacity to manufacture more than *four times* as much ELITE as would have been required to cover Nova's sales, and that Dow would have been able to maximize that capacity to exploit the additional demand that would have existed in the hypothetical world in which Nova did not infringe.

Nor has Nova shown that the district court abused its discretion in using Dow's *official* cost estimates to calculate the profit margin Dow would have earned on the additional sales of ELITE. Those estimates are so reliable that Nova's own expert used them to calculate Dow's profit margin at the first trial, and the alternative measure that Nova presented at the supplemental-damages trial included fixed costs, which must be excluded from the lost-profits analysis.

The district court erred, however, when it denied Dow's request for enhanced supplemental damages for post-judgment infringement. That ruling is mistaken because it rests entirely on the district court's prior determination that Nova's *pre-judgment* infringement was not willful, and thus ignores the significance of the jury's verdict in Dow's favor. Regardless of the nature of its pre-judgment infringement, Nova's intentional and voluntary decision to continue—and in fact to increase—its infringing activity after the judgment renders Dow eligible for enhanced supplemental damages.

The judgment thus should be affirmed except to the extent it denied enhancement of supplemental damages for post-judgment infringement, and the case should be remanded for further proceedings on enhancement.

JURISDICTIONAL STATEMENT

The district court had jurisdiction of this patent-infringement case under 28 U.S.C. §§ 1331, 1338(a). This Court has jurisdiction under 28 U.S.C. § 1295(a)(1). *But see* Part I.A., *infra*. The district court entered final judgment on April 14, 2014. The parties timely noticed appeals on April 23 and May 1, 2014.

COUNTERSTATEMENT OF THE ISSUES

1. Whether Nova's request that this Court hold the patents-in-suit indefinite fails, where (a) the district court's determination that the patents-in-suit are not indefinite merged into the 2010 Rule 54(b) final judgment and thus is not reviewable on this appeal of the separate 2014 supplemental-damages judgment; (b) this Court's affirmance of that determination is consistent with the Supreme Court's *Nautilus* decision and thus is the binding law of the case; and (c) persons of ordinary skill in the art would know the location and units for measurement of the slope of the strain hardening curve claimed in the patents-in-suit.

2. Whether the district court's supplemental-damages findings, following bench trial, are not clearly erroneous and are within its discretion, where (a) the evidence at trial supports its determination that Dow had sufficient

manufacturing capacity to cover the sales it could have made but for Nova's infringement; and (b) it relied on Dow's official quarterly estimates of standard costs to calculate Dow's profit margin.

3. Whether the district court erred in denying enhancement of *post-judgment* supplemental damages, which accrued while Nova was an adjudged infringer, based solely on its prior ruling that Nova's *pre-judgment* infringement was not objectively willful.

COUNTERSTATEMENT OF THE CASE

A. Dow's Patents And ELITE Polyethylene Film

The patents-in-suit (U.S. Patent Nos. 5,847,053 and 6,111,023) claim a new kind of plastic that is stronger than conventional plastics, allowing users to "downgauge" their plastic films, *i.e.*, to use thinner films (and less plastic) for the same purpose. A305; A318. Dow's inventors discovered blends of two specific polymer components—Component A and Component B—that provided an unprecedented combination of impact strength, stiffness, and improved processability. A305; A318; A1285; A1398-1400. The invention makes it possible to downgauge by more than a third in some instances. A1781-82.

The Dow inventors discovered that by using a Component A with a slope of strain hardening coefficient ("SHC") greater than or equal to 1.3, blended with a Component B, it was possible to achieve a superior combination of properties.

A312 (15:32-48); A1365-66. SHC is a parameter developed by the Dow inventors, and explained in the patents-in-suit, that depends largely on the strain hardening properties of the polymer. A307 (6:7-55); A11381. The patents specify that SHC "is calculated according to the following equation: *SHC=(slope of strain hardening)*$(I_2)^{0.25}$*," where I_2 is melt index. A307 (6:44-50). Strain hardening, slope, and melt index were concepts well known in the art. A2377-78; A11494-99; A11522-23.

"Strain hardening" describes the property whereby polymer film becomes stronger as it is stretched. A11494-99; A11522-23. This phenomenon occurs in stretching a plastic bag: As the patent explains, the film reaches a "yield point" at which it gives and becomes easy to stretch for a period (called "drawing"), after which it eventually begins to offer more resistance to stretching, *i.e.*, it begins to strain harden. A2384-85. The patents teach to measure a polymer's strain hardening properties with an "Instron Tensile Tester," a device that stretches a sample with increasing load (based on the "crosshead speed" set by the user) until the sample breaks, and measures the "displacement" of the sample at different load levels. A307 (6:25-44). The Instron device generates a graph called a "tensile curve," also called a "stress strain curve," by plotting load versus the displacement of the sample. A2398-400. The following typical stress/strain curve was,

according to Nova's expert, Dr. Gerald Fuller, "very, very well known" in the art when Dow filed its patent applications (A3564-65):

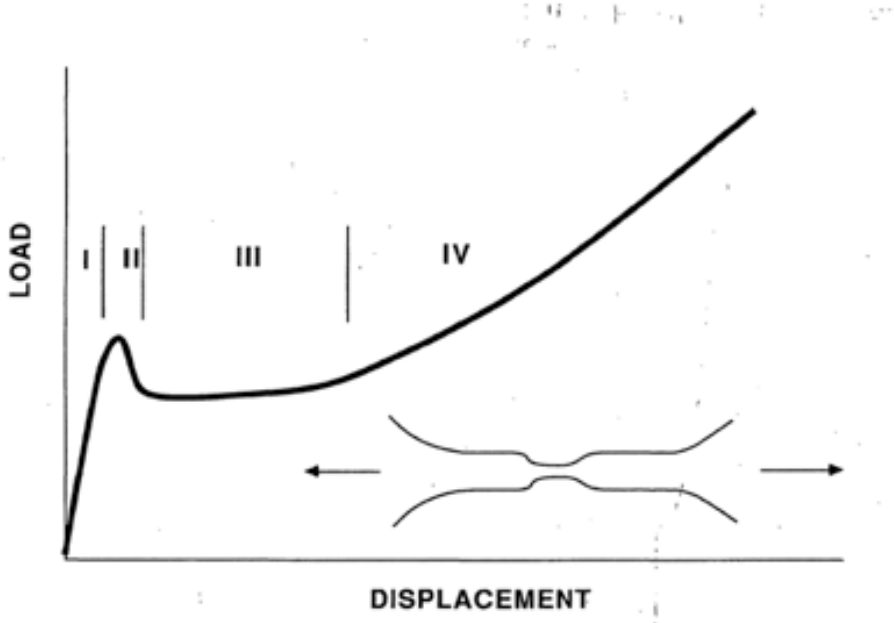


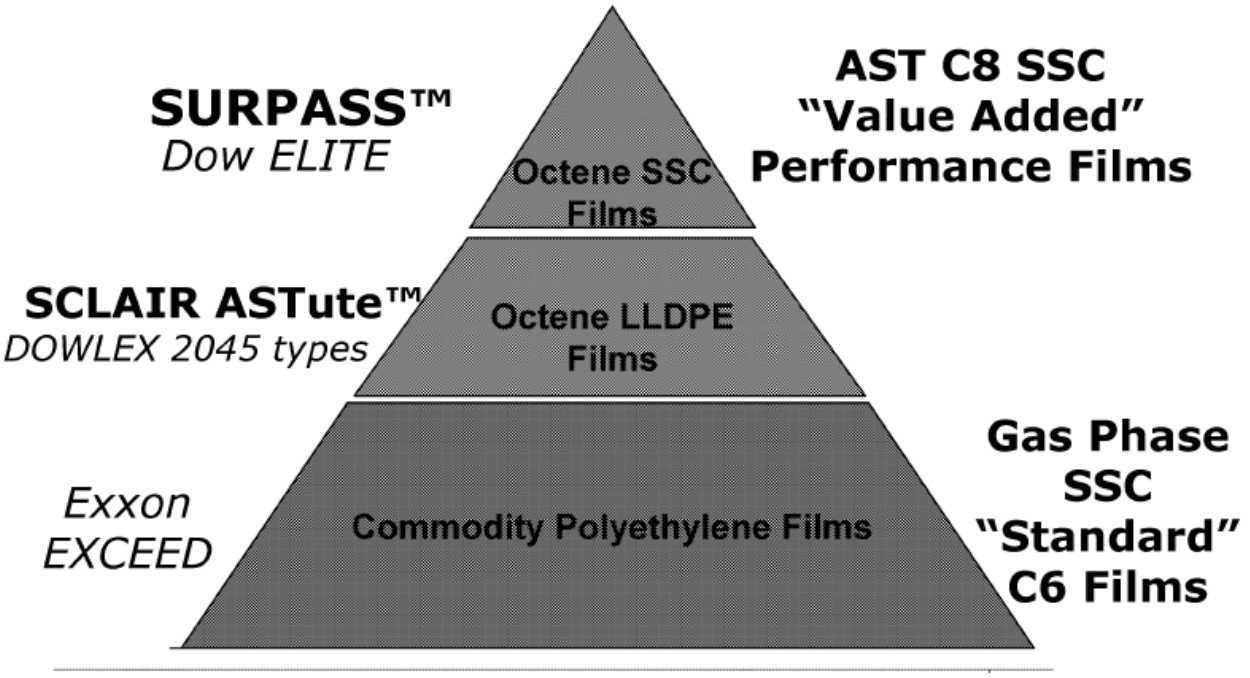
Figure 8. A typical load-displacement curve.

A10493. Persons skilled in the art would measure the slope of strain hardening in region IV at the place of maximum slope. A307 (6:35-50); A2388-89.

Dow commercialized its invention through its successful "ELITE" polyethylene film product. A1615. Dow positioned ELITE in the marketplace as having a superior overall balance of excellent physical properties and processability as compared to other products. A10-11. Dow's customers purchase hundreds of millions of pounds of ELITE per year (A12079; A12236-38; A13956-57; A13960-62; A14066-67 (summarizing A13956-62)), which they use in a range of products including food packaging and heavy-duty shipping sacks (A1770).

B. Nova's Infringing Products

Nova, which manufactures and sells polyethylene in direct competition with Dow, recognized Dow's ELITE as the "Cadillac" of the market. A10432; A2800. Nova's strategy, as described in its own documents, was to "clone" or make a "drop-in" replacement for ELITE, which it introduced in 2002 under the name "SURPASS." A2989-92; A10764; A10768; A10786; A1766-69; A1787-88; A2800-10; A10754-55; A10788. Nova's documents put its infringing SURPASS alone with ELITE at the top of the polyethylene film market:



A10800.

C. The 2010 Trial And Rule 54(b) Final Judgment

Dow sued Nova in 2005, alleging that Nova willfully infringed the '053 and '023 patents by importing and selling its SURPASS products in the United States. *See* A205. Nova filed counterclaims against Dow, alleging (*inter alia*) violations of the antitrust laws. *See* A210. The district court (Farnan, J.) entered the parties' stipulated order bifurcating proceedings and staying Dow's willful-infringement claim and Nova's antitrust counterclaims until after resolution of the infringement claim. *See* A210.

The district court held a twelve-day jury trial between May 27 and June 16, 2010, followed by a one-day bench trial regarding Dow's standing to sue. *See* A261-64. The court concluded that Dow had standing (A432-41; A430); the jury found that Dow's patents were valid and that Nova had infringed them (A446-49).[1] The jury awarded Dow $61.77 million in damages to compensate for infringement through December 31, 2009, the last date for which data was available. A449. That determination entailed $57.45 million in lost profits (*id.*), which implied a finding that in the absence of Nova's infringement Dow would have captured at

[1] Although the district court ruled at the claim-construction phase that generally indefiniteness presents a question of law (A491), it determined that an issue for the trier of fact remained regarding whether a skilled person "would be unable to determine the proper scope of [the SHC] limitation" (A498). The jury rejected Nova's argument that the claims were indefinite. A448.

least 72% of Nova's sales volume (A22; A12314-16). The court entered judgment in Dow's favor on June 18, 2010. A442.

Dow thereafter sought supplemental damages that accrued after December 31, 2009. A260. Nova did not contest Dow's entitlement to supplemental damages, and both parties agreed that determination of the amount of supplemental damages should be stayed until after Nova's appeal. A424.

The district court denied Nova's post-trial motions, including a motion to set aside the jury's determination that the patents were not indefinite. The district court ruled that the testimony of Dow's expert, Dr. Benjamin Hsiao, provided "more than ample evidentiary support for the jury's verdict" of validity. A418.

In August 2010, Nova moved the district court for entry of final judgment on the patent-infringement claims pursuant to Rule 54(b). A267. The court (Stark, J.[2]) granted Nova's motion, designating its June 18, 2010 Judgment (A442) and its Order on Dow's standing (A430) as a final judgment, and finding that there was "no just reason for delay" in entering judgment. A401. At Nova's request and over Dow's objections, the district court stayed proceedings on Dow's willful-infringement claim and Nova's antitrust counterclaims (in addition to the already-

[2] The case was reassigned to Judge Stark following Judge Farnan's retirement from the bench.

stayed request for supplemental damages) pending resolution of Nova's appeal of the Rule 54(b) judgment. A269.

D. This Court's 2012 Decision Affirming The Rule 54(b) Final Judgment

Nova appealed the Rule 54(b) final judgment (A401), invoking this Court's jurisdiction under 28 U.S.C. § 1295(a)(1) to review "final decision[s]" in patent cases. *See* Brief for Defendants-Appellants 1, *Dow I*, 458 F. App'x 910 (No. 10-1526) ("Nova *Dow I* Br. __"). In January 2012, this Court "affirm[ed] the judgment entered against Nova" in full. *Dow I*, 458 F. App'x at 921. This Court acknowledged that had jurisdiction under Section 1295(a)(1), *id.* at 912, and agreed with the district court that Dow had standing, *id.* at 912-16, that its patents are not indefinite, *id.* at 917-20, and that Nova's SURPASS products infringed the patents, *id.* at 920-21. Judge Reyna dissented on standing, and did not reach validity or infringement. *Id.* at 922-35 (Reyna, J., dissenting).

With respect to indefiniteness, Nova argued, as it does again here, that "Dow's claims do not inform the public as to their scope" because the patents purportedly (i) do not teach the use of any particular units for the slope of strain hardening and (ii) "fail to identify where in the strain hardening region the parallel line should be drawn within the extended and curved region" in order to determine the slope. Nova *Dow I* Br. 7. Nova further contended that the specification of the patents "refer the reader to [a] missing [Figure 1] 'show[ing] the various stages of

the stress/strain curve used to calculate the slope of strain hardening'" (*id.* at 56-57 (quoting A307 (6:40-44))), and asserted that "the missing figure … was needed to provide the slope location and units" (*id.* at 57 n.9).

On *de novo* review, this Court rejected Nova's arguments and affirmed the district court's determination that the patents-in-suit are not indefinite.[3] This Court found no ambiguities in the claims and instead held that "one of ordinary skill in the art would know at which particular part along the curve the slope of the stress/strain curve should be measured," 458 F. App'x at 918, and "would also realize that the slope of the strain hardening should be determined in English units," *id.* at 920.

With respect to location, this Court concluded that the absence of a drawing of the strain/stress curve did not render the patents indefinite, because even Nova's expert Fuller agreed that "a typical stress/strain curve was 'very, very well known [to a] person of ordinary skill in the art ... who worked with semi-crystalline polymers and polyethylene,' and that one of ordinary skill in the art would come across similar curves in relevant textbooks." *Id.* at 918. This Court also rejected Nova's argument that one might measure different slope values because the strain hardening region is curved, explaining that, according to the unrebutted testimony

[3] This Court did not decide whether "it was error to submit the question of indefiniteness to the jury," because "[e]ven had the district court not done so, the outcome would be no different." 458 F. App'x at 917 n.8.

of Dow's expert Hsiao, "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." *Id.* at 919.

With respect to units, this Court concluded that "[b]ecause the specification … teaches that all measurement units that are relevant to the determination of the slope of strain hardening are made in English units, one of ordinary skill in the art would also realize that the slope of the strain hardening should be determined in English units." *Id.* at 920. This Court noted that both parties' experts agreed that, when the crosshead speed was set in inches per minute as recited in the patents-in-suit, the user manual for the Instron Tensile Tester specified an output in English units unless specified otherwise. *Id.* This Court further explained that Table 3 of the patent "reports the output of the Instron Tensile Tester (e.g., yield, tensile strength, and toughness) in English units." *Id.*

The Supreme Court denied Nova's petition for a writ of *certiorari*, which, among other things, wrongly argued that this Court's indefiniteness judgment was based on the "insolubly ambiguous" standard. 133 S. Ct. 544 (2012).

E. The 2013 Supplemental-Damages Trial

Following *Dow I*, the district court lifted its stay on the claims that had not been resolved by the 2010 Rule 54(b) final judgment. A13074-76. The court subsequently granted Dow's motion for summary judgment on Nova's antitrust

counterclaims and Nova's motion for summary judgment on Dow's willful-infringement claim. *See* A99. With respect to the willful-infringement claim, the district court concluded that Nova's indefiniteness defense was objectively reasonable and thus Nova's *pre-judgment* infringement was not willful as a matter of law. A14180-82.

The case proceeded to a bench trial (held on April 30 and May 1, 2013) limited to determining Dow's damages from January 1, 2010 through October 15, 2011, the date on which Dow's patents expired, and to whether Nova's post-judgment infringement was willful. A280. Of the issues contested at trial, only three remain in dispute on appeal: whether Dow had the capacity in 2010-2011 to produce sufficient quantities of ELITE to replace Nova's infringing SURPASS sales; what profit margin Dow would have earned on the sales it would have made but for Nova's infringement; and whether Dow should be awarded enhanced supplemental damages because Nova's post-judgment infringement was willful. Nova did not raise indefiniteness during the supplemental-damages proceedings.

1. The Evidence Of Dow's Manufacturing Capacity

At trial, Nova contended that Dow should not be permitted to recover lost profits because Dow would not have been able to manufacture an additional 120 million pounds per year of ELITE to replace the sales that Nova made through its infringement of Dow's patents in 2010 and 2011. *See* A12033; A14009, A14018,

Nova Br. 25 (Nova produced about 140 million pounds of infringing SURPASS per year); A12314-15 (jury implicitly found that, absent infringement, Dow would have captured at least 72% of Nova's sales).

Dow in fact had the capacity to produce some *500 million pounds of additional ELITE* in North America in both 2010 and 2011—more than *four times* the amount it would have needed to cover the demand that would have existed but for Nova's infringement. In the 1990s, Dow built two dual-reactor polyethylene production trains for the specific purpose of manufacturing the high-value ELITE product, which together were capable of producing more than a billion pounds of ELITE per year. A12077; A12079; A12234-35. During the supplemental-damages period, however, Dow sold only enough ELITE to fill about half of its trains' capacity. A12079; A12236-38; A13956-57; 13960-62; 14066-67 (summarizing A13956-62).

Absent Nova's infringement, Dow would have planned to produce enough additional ELITE to meet demand. Based on the jury's verdict, but for Nova's infringement, Dow would have spent 2002-2009 (the period that the jury considered) as the *incumbent supplier* of ELITE to the bulk of the customer base that Nova captured through its infringement. A12316. And because customers tend to remain with their supplier, Dow's incumbency in 2009 meant that it would have entered 2010 as the supplier for most of Nova's SURPASS customers.

A12316-17.[4] Thus, because Dow conducts annual meetings to plan production for the upcoming year based on existing customer base and sales for the prior year (A12151-53), its incumbent status in 2009 would have enabled it to plan to produce and contract to sell additional ELITE in 2010 and then to repeat the process in 2011. A12153; A12204-06; *see* A14004-07.

Additionally, Dow, as the incumbent manufacturer, could and would have contracted in advance to obtain sufficient supply of octene (a raw-material precursor to ELITE) to meet its planned-for needs. A12206; A12239; A12241-43; A12289-90. Dow's practice was to "right-size the octene contracts to the amount of volume that [it was] expecting to need" in the upcoming year. A12242-43. Thus, in the real world, because Dow expected its octene needs to decline from 2009 to 2010, it reduced the size of its annual octene-procurement contract. A12242-43. Conversely, if, as in the "but for" world, Dow had elevated sales of ELITE in 2009, Dow would have planned for additional production of ELITE in 2010 and contracted for enough octene to satisfy those plans. A12243.

This procurement would not have been difficult. Dow consumes about 350 kilotons of octene per year (A12265; A12290), and producing an additional 120 million pounds per year of ELITE would have required Dow to procure only about

[4] For a customer to change suppliers, it must ensure that the alternate resin meets its requirements—a time-consuming process known as "qualifying" that customers prefer to avoid. A12143-47; A12189-95.

5 additional kilotons of octene annually (*see* A12221)—an increase of less than 2%, small enough that Dow could have met the additional demand simply by *not reducing* its octene contract between 2009 and 2010 (A12289-90).

Nor would short-term 2010-2011 octene-supply disruptions (which were "normal industry operating upsets," A12226) have posed any obstacle to Dow producing enough ELITE to meet demand. Indeed, based on its successful planning, Dow never had to reduce its sales of ELITE in 2010-2011 (A12225-26; A12230-32), nor did it ever run out of octene (A12226-27). Dow in fact *increased* its prime ELITE inventory by 70% between June and December 2010 (A12231; A12234), and it has *always* been able to procure enough octene to satisfy its ELITE-production needs. Even if there had been a severe octene shortage in 2010 or 2011 (which there was not), Dow would have worked with its customers that do not demand the superior performance of octene-based Dowlex (a lower-margin Dow product) to accept a hexene-based version, as it had before, allowing Dow to reallocate its octene supplies as necessary. A12218-24; A12226-27; *see* A14005 (Dow increased production of hexene-based products from 2005-2007).

Finally, rather than allowing its equipment to sit idle in the unlikely event that Nova decided to stop infringing, Dow mitigated its losses by employing one reactor on each train to produce lower-margin Dowlex and HDPE—products requiring the use of only one of the production trains' two reactors. A12080;

A12083-86; A12238-39; *see* A12212, A14192-93 (Dow produced over 418 million pounds of HDPE in 2010-2011). But, if Nova had not infringed, Dow would have used its production trains differently: Dow's strategy ("selling out and selling up") is to maximize utilization of its production trains while giving priority to high-margin products like ELITE—meaning that if there is demand for ELITE when the trains are running at full capacity, Dow will reduce production of lower-margin, commodity-grade, "capacity-filler" (A12207-08) products like HDPE in order to free up reactor space for production of ELITE. A12081-91; A12137-38; A12141; A12209; A13938-39. Dow deliberately avoids long-term HDPE contracts for just this reason: "we need[] to be able to pull those pounds away [from HDPE] and resell them" by using the capacity for higher-margin products like ELITE. A12094-95; *see* A12102. Jose Obregon, Dow's Product Director during the supplemental-damages period, testified that "[o]f course" Dow would have given up production of 100 million pounds of commodity-grade HDPE in order to replace it with ELITE: "[T]hose [ELITE] pounds would be more profitable…. [T]hose pounds would be aligned to the strategy of what the assets [the dual-reactor trains] were built for. That's just what we do." A12216; *see* A12238-39 (Dow would have pursued opportunity to sell additional ELITE in 2010-2011, because "that's what the assets are built for. That's the strategy."). And Dow had ample space within its total production capacity to make such a shift, as most of

the 418 million pounds of commodity HDPE that it produced in 2010 and 2011 (A12212; A14192-93) easily could have been replaced with ELITE (A12216).

2. The Evidence Of Dow's Profit Margin

Dow's expert, Creighton Hoffman, calculated lost profits by multiplying the pounds of film that Dow would have sold absent Nova's infringement by Dow's average incremental profit margin on ELITE, which he determined to be $0.37/pound. A12329. He calculated the incremental profit margin by subtracting costs from the average price per pound of ELITE in the United States. A12332-33; A14196; A14020. Hoffman and Nova's expert, Chelton Tanger, agreed on ELITE's average price (A12332-33), but disagreed on ELITE's component costs.

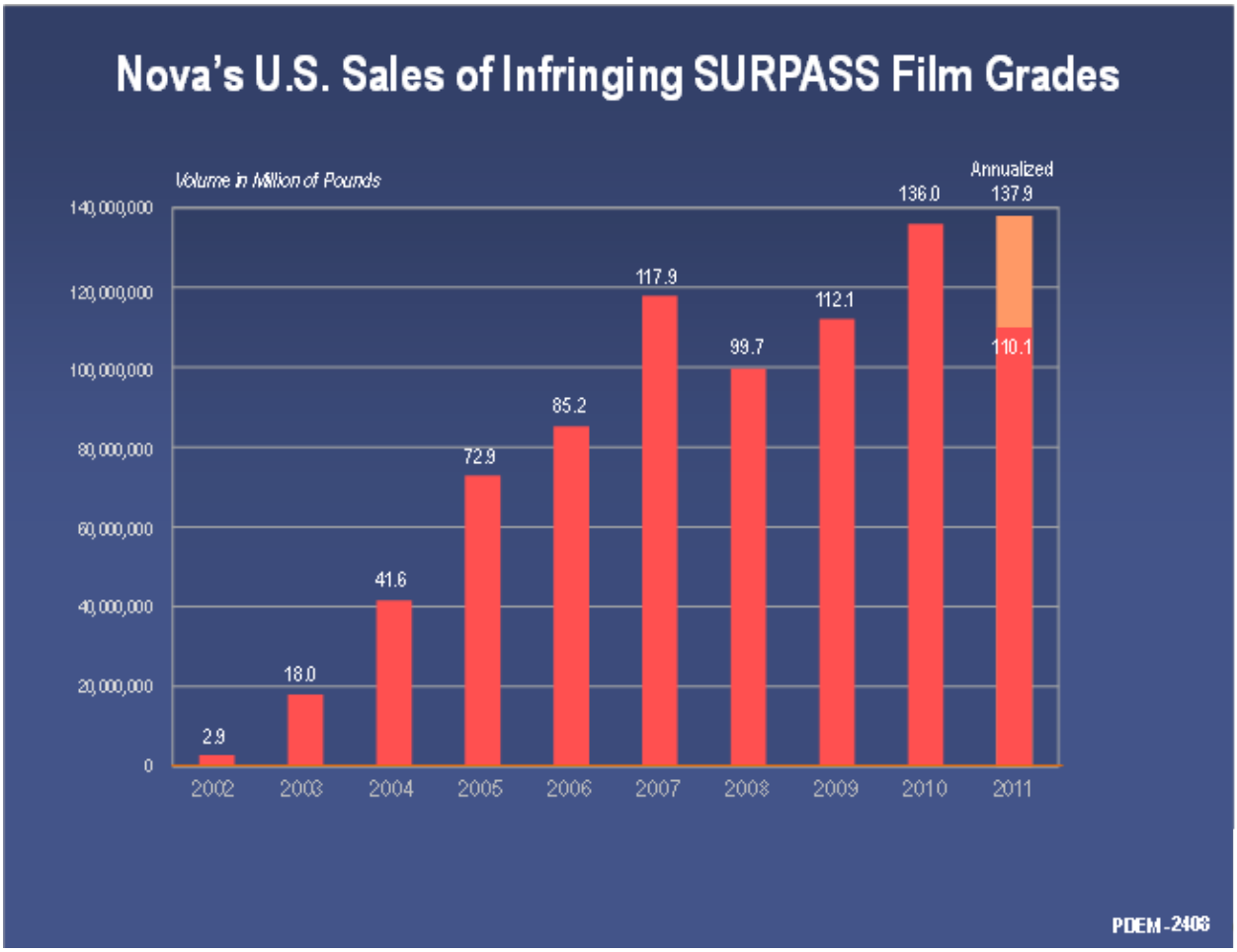
Just as he had in the 2010 trial, for the supplemental-damages trial Hoffman used Dow's internal "standard costs sheet," which provides estimated costs that Dow updates each quarter. A12335. These standard costs include only incremental costs and no fixed costs. A12340. Hoffman explained that the proper profit margin for additional ELITE sold should be incremental—*i.e.*, it should exclude fixed costs that Dow would have incurred even if it had not sold any additional ELITE. A12337-40.

In the 2010 trial, Nova's expert Tanger had also used Dow's "standard cost sheet" (A12335), but for the supplemental-damages trial he switched to the "Standard Cost – Trade" figures in Dow's profit and loss statements (A12336).

Tanger testified that the "Standard Costs – Trade" were 4-7 cents higher per pound than the costs Hoffman used—an amount he initially attributed to the difference between actual cost of ethylene (a raw material for making ELITE) and Dow's estimated costs. A12558-59. On cross-examination, however, Tanger admitted that ethylene costs "cannot account for the increase[]" in total costs between Dow's figures and the "Standard Cost – Trade" figures. A12572-73. Instead, as Hoffman explained, the "Standard Cost – Trade" figures include both *incremental* costs and *fixed* costs such as "manufacturing variances from upstream business units at Dow." A12338. Tanger offered no rebuttal to Hoffman's explanation. A12570-71.

3. The Evidence Of Nova's Willful Post-Judgment Infringement

Following the June 2010 verdict, Nova not only refused to cease selling its infringing SURPASS products, but one of its "key" business strategies was to grow its business for the infringing SURPASS products. A14189. Nova's strategy succeeded, and Nova substantially increased its sales of infringing SURPASS products after the verdict:



A14195; *see* A14018.

Nova benefitted from its continued infringement not only during the immediate post-judgment period, but also after Dow's patents expired in October 2011: Instead of having *no* annual sales upon the expiration of Dow's patents, with its potential customers locked into multi-year commitments to purchase ELITE from Dow (A12094-96; A12102; A12143-44) and facing an 18-month process to qualify its SURPASS products (A12195; A14185 (¶3); *supra*, at 16 n.4), by October 2011 Nova was setting records with over $130 million in annual sales of SURPASS (A14195; A14018).

F. The 2014 Supplemental-Damages Judgment

In March 2014, the district court issued findings of fact and conclusions of law in support of a nearly $28 million supplemental-damages award to Dow. A5-29. The court noted that its findings were "based on the Court's assessments of what was demonstrated by a preponderance of the credible evidence, including the testimony of witnesses." A8 n.2. With respect to Dow's production capacity during the supplemental-damages period, the court found that although "Dow's ELITE-capable trains were fully utilized in 2010 and nearly fully utilized in 2011," "only about half of Dow's [billion-pound] capacity on those trains was used to manufacture ELITE in those years; the remaining capacity was used to manufacture DOWLEX and HDPE." A12-13. Thus, the court found that "Dow had the ability to produce another 500 million pounds of additional ELITE per year during the Supplemental Damages Period," and that "by planning differently" it could have utilized this excess capacity to manufacture additional ELITE to meet increased demand. A13.

Specifically, the court found that if Nova had not infringed, Dow would have captured the bulk of Nova's customers from 2002-2009, the period that the jury considered in the first trial. A16. This would have made Dow the incumbent seller (A22)—a "very powerful position," given that "customers tend to stay with their incumbent supplier to avoid having to qualify [a competitor's] alternative

resin" (A10). Thus, in the hypothetical world in which Nova did not infringe, Dow would have based its 2010 and 2011 production plans on the reasonable assumption that it would have kept most of its customers. A22. The court found that Dow therefore "would have planned for, and produced, the additional ELITE products" that its customers would have demanded (*id.*), "by allocating more of its capacity to its high value ELITE products, and less of its capacity to non-strategic, commodity-grade products like HDPE," and by contracting to purchase enough raw materials to meet its production needs (A13-14). The court agreed with "the testimony presented by Dow outlining its business practice of displacing HDPE production to free up capacity for ELITE" (A21), and found "that Dow had access to the octene necessary to fulfill the demand for ELITE in the but for scenario" (A22). Thus, the court found that "but for NOVA's infringement, Dow could have and would have been utilizing its production facilities to the full extent necessary for manufacturing ELITE instead of HDPE." A21.

The court also adopted Dow's incremental profit-margin calculation of $0.37/pound and rejected Nova's proposed cost calculations that were several cents higher. A23-24. The court explained that "Dow's estimates are based on ELITE components from Dow's quarterly standard cost sheets," which both experts had used at the jury trial, while Nova's expert relied for the first time on the "Standard

Cost – Trade" estimates—which Dow contended included fixed costs, not just incremental costs. *Id.* The court sided with Dow on this factual dispute. A24.

The district court found that Nova sold about 246 million pounds of its infringing SURPASS products during the supplemental-damages period (A16), and adopted the jury's implied finding that but for Nova's infringement Dow would have captured about 72% of those sales (A22). The court then determined lost profits by applying the 72% capture rate and the $0.37-per-pound profit margin to 246 million pounds, and subtracting the profit on HDPE that Dow would have foregone in the "but for" world in order to sell more ELITE. A22.

The court also awarded Dow reasonable-royalty damages for the remaining 28% of Nova's infringing sales, applying the jury's 1.755% royalty rate for sales from January 1 through July 30, 2010, and a 2.11% rate for July 31, 2010 through October 15, 2011. A25. The latter rate reflected that "NOVA changed from being an alleged infringer to being an adjudicated infringer, a factor that would have reduced NOVA's relative bargaining power in the hypothetical negotiations after trial." *Id.* On those bases, the court awarded Dow supplemental damages totaling $27,676,974. A1.

The district court, however, denied Dow's request for enhanced supplemental damages for Nova's willful *post-judgment* infringement, stating that its earlier decision that Nova's *pre-judgment* infringement was not willful (because

Nova had presented a "reasonable" indefiniteness defense, A14180) had "effectively decided this issue." A26. The court did not address whether Nova acted willfully in continuing to sell its SURPASS products *after* they were found to infringe Dow's valid patents.

The court entered final judgment on April 14, 2014. A1-2.[5] Nova filed a notice of appeal from that judgment (A14197-98), and Dow cross-appealed (*see* A283).

G. Nova's Frivolous Independent Action In Equity

Meanwhile, in September 2013 (during the pendency of the supplemental-damages proceedings) Nova took the unusual step of filing in the district court an independent action in equity pursuant to Fed. R. Civ. P. 60(d)(1), seeking relief from the 2010 Rule 54(b) final judgment. *See Nova Chems. Corp. (Canada) v. Dow Chem. Co.*, No. 13-cv-1601 (D. Del. Sept. 23, 2013). Nova acknowledged that the 2010 judgment was "final" (*id.*, ECF No. 1 ¶ 7 (Sept. 23, 2013)), and, in an amendment in early 2014, made the extraordinary and wholly unfounded allegations that Dow's outside counsel conspired with Dow and its witnesses to

[5] Following the supplemental-damages trial, Nova requested a stay of entry of judgment pending resolution of *ex parte* reexaminations that it had filed in December 2012 seeking to invalidate Dow's already expired patents. The district court denied a stay (A27-28), and those *ex parte* reexaminations were later resolved in Dow's favor (*see* Reexamination Certificate 6,111,023 C1 (U.S.P.T.O. July 14, 2014); Reexamination Certificate 5,847,053 C1 (U.S.P.T.O. Aug. 18, 2014)).

defraud the court (*see id.*, ECF No. 11 (Jan. 30, 2014)). Dow moved to dismiss the amended complaint, and the district court (Stark, J.) found Nova's allegations so implausible that it granted the motion from the bench and *sua sponte* raised the issue of sanctions against Nova. *See id.*, ECF No. 28 at 12-13, 51-56 (July 29, 2014). Dow thereafter moved for sanctions and an award of attorneys' fees against Nova and its counsel. *See id.*, ECF Nos. 30-31 (Sept. 5, 2014).

SUMMARY OF ARGUMENT

The district court's 2014 judgment should be affirmed except to the extent it denied enhancement of the supplemental damages awarded to Dow.

I. Nova's request that this Court hold the patents-in-suit to be indefinite should be rejected for any of three reasons. *First*, this Court lacks jurisdiction over the question of indefiniteness because the district court's 2010 determination that the patents-in-suit are not indefinite merged into the 2010 Rule 54(b) *final* judgment, not the *separate* 2014 judgment on appeal here. The latter judgment does not encompass *any* ruling as to indefiniteness, which was not raised or decided during the supplemental-damages proceedings. Nor is the 2010 judgment interlocutory, as Nova now asserts; it is a *final* judgment entered pursuant to Rule 54(b) at *Nova's* request, and it may not be revisited in this appeal.

Second, even if the question of indefiniteness were properly on appeal now, Nova concedes that *Dow I*'s holding that the patents are not indefinite is

presumptively the law of the case. And there is no conflict between *Dow I* and the intervening *Nautilus* decision that could justify revisiting that determination: *Dow I* did not invoke or apply the "insolubly ambiguous" or "amenable to construction" standards that the Supreme Court rejected. Instead, this Court held—consistent with *Nautilus*—that the patents-in-suit are not indefinite because they have a single, unambiguous meaning to persons of ordinary skill in the art.

Third, were this Court to reach the merits, Nova's indefiniteness arguments would fail because persons of ordinary skill would understand the scope of the claims with reasonable certainty. Nova wrongly argues that the scope is uncertain because the patents purportedly do not disclose certain parameters that could affect the test of whether the Component A of an accused polymer has a strain hardening coefficient of at least 1.3. But as this Court held in *Dow I*, persons of ordinary skill reading the patents would have understood where on the stress/strain curve to measure the slope of strain hardening and what units to use when reporting that slope.

II. Nova's challenges to the district court's factual findings and discretionary decisions in the calculation of supplemental damages should be rejected. The evidence adduced at trial amply supports the district court's finding that Dow would have had the capability to manufacture sufficient ELITE to meet the demand that would have existed absent Nova's infringement: Dow had the

capacity to manufacture *four times* as much ELITE as would have been required, Dow would have foregone its low-margin sales of commodity products to produce as much high-margin ELITE as it could sell, and Dow would have contracted in advance to purchase enough raw materials to meet its ELITE production needs. Nova's reliance on circumstances as they actually existed following years of infringement ignores that lost profits are calculated based on a hypothetical "but for" world in which there was no infringement.

The district court likewise was well within its discretion to determine that Dow's *official* quarterly estimates of standard costs—upon which Nova's own expert had relied in the 2010 trial—were the best evidence of Dow's costs for purposes of determining lost profits. Whereas Dow's official estimates reflect only the incremental costs that Dow would incur for each additional pound of ELITE produced, Nova's alternative figures improperly include substantial fixed costs that Dow would have incurred regardless of whether it increased production.

III. The district court erred in declining to enhance Dow's supplemental damages for Nova's *post-judgment* infringement solely based on its prior determination that Nova's *pre-judgment* infringement was non-willful. In so ruling, the district court wrongly ignored Nova's voluntary and intentional decision to *increase* production of its infringing SURPASS products *after* the jury's verdict

of infringement and rejection of Nova's defenses. The case should be remanded for further consideration of Dow's request for enhanced supplemental damages.

STANDARDS OF REVIEW

Assuming *arguendo* that any issue of indefiniteness is properly before this Court, it would be reviewed *de novo*. *Dow I*, 459 Fed. App'x at 917.

The district court's calculation of patent-infringement damages is a factual determination that this Court reviews for clear error. FED. R. CIV. P. 52(a)(6); *SmithKline Diagnostics, Inc. v. Helena Labs. Corp.*, 926 F.2d 1161, 1164 (Fed. Cir. 1991); *accord Home Sav. of Am., FSB v. United States*, 399 F.3d 1341, 1347 (Fed. Cir. 2005). Clear error may be found only where this Court reaches a "definite and firm conviction that a mistake has been committed." *SmithKline*, 926 F.2d at 1164. "Where there are two permissible views of the evidence, the factfinder's choice between them cannot be clearly erroneous." *Anderson v. Bessemer City*, 470 U.S. 564, 573-74 (1985) (citation omitted).

This Court reviews the district court's determination of how best to calculate a patentee's profit margin in a lost-profits case for abuse of discretion. *SmithKline*, 926 F.2d at 1164. Such an abuse occurs where the district court "applies an incorrect legal rule or relies upon a factual finding that is illogical, implausible, or without support in inference that may be drawn from the record." *Trebro Mfg., Inc. v. Firefly Equip., LLC*, 748 F.3d 1159, 1166 (Fed. Cir. 2014).

This Court reviews the district court's willfulness determination *de novo*. *See, e.g., Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs., Inc.*, 682 F.3d 1003, 1006-07 (Fed. Cir. 2012).

ARGUMENT

I. NOVA'S INDEFINITENESS ARGUMENTS ARE NOT PROPERLY BEFORE THIS COURT AND IN ANY EVENT LACK MERIT

A. This Court Lacks Jurisdiction Over Any Issue Of Indefiniteness

Nova greatly overreaches (Br. 2, 35, 37-40, 65) in asking this Court to "reconsider" its own prior decision and "reverse" the district court's 2010 determination that Dow's patents are not indefinite. The question of indefiniteness is *outside this Court's jurisdiction* on this appeal: The district court's 2010 non-indefiniteness ruling merged into the Rule 54(b) *final* judgment that this Court affirmed in *Dow I*, not into the *separate* final judgment now on review.[6] The latter judgment does not encompass *any* ruling as to indefiniteness, which was not raised

[6] *See, e.g., Meadaa v. K.A.P. Enters., L.L.C.*, 756 F.3d 875, 879 (5th Cir. 2014) ("A proper Rule 54(b) judgment is a final judgment for all purposes on the adjudicated claims. When such a judgment is appealed, therefore, all interlocutory orders of the district court leading up to the judgment merge into the final judgment and become appealable at that time.") (footnotes and internal quotation marks omitted); *Worldwide Church of God v. Phila. Church of God, Inc.*, 227 F.3d 1110, 1114 (9th Cir. 2000) ("all of the district court's orders are merged into the final [Rule 54(b)] judgment"); *Bowdry v. United Airlines, Inc.*, 58 F.3d 1483, 1489 (10th Cir. 1995) ("Once certified under Rule 54(b), th[e] judgment was final. All prior interlocutory judgments affecting these appellants merged into the final judgment and became appealable at that time."); 10 MOORE'S FEDERAL PRACTICE § 54.28[3][c].

or decided in the course of the supplemental-damages proceedings. Those proceedings concerned only a determination of the *amount* of damages that accrued between January 1, 2010 and October 15, 2011—*not* Dow's *entitlement* to such an award. And because the 2014 judgment does not encompass the no-indefiniteness ruling, that determination cannot be reviewed, let alone set aside, on this appeal. *See, e.g.*, *Brown v. Eli Lilly & Co.*, 654 F.3d 347, 355 (2d Cir. 2011) (court lacked jurisdiction on appeal of second judgment to decide issues presented in prior appeal of Rule 54(b) judgment); *In re Martin*, 400 F.3d 836, 841 & n.1 (10th Cir. 2005) (rulings leading to initial final judgment do not merge into subsequent judgment and are not reviewable on appeal of the latter); *Crowder v. Telemedia, Inc.*, 659 F.2d 787, 788-89 (7th Cir. 1981) (per curiam) (appeal of judgment awarding attorneys' fees did not permit appeal of prior judgment dismissing claims in same case); *cf. MeadWestVaco Corp. v. Rexam Beauty & Closures, Inc.*, 731 F.3d 1258, 1271 (Fed. Cir. 2013) (defendants "waived the issue of indefiniteness by failing to raise it at the bench trial"); *Insituform Gulf S., Inc. v. Cat Contracting, Inc.*, 113 F.3d 1258 (Fed. Cir. 1997) (unpubl.) (no appellate jurisdiction over issues not encompassed in notice of appeal).

Nova wrongly states (Br. 38) that this Court's prior decision was a merely "*interlocutory* holding of non-invalidity" (emphasis added), and that "no valid judgment … exists" in this case. But *Dow I* was not an "interlocutory" appeal:

Both this Court and Nova correctly recognized that *Dow I* was a *final-judgment* appeal pursuant to 28 U.S.C. § 1295(a)(1), following *Nova's* successful motion for entry of a Rule 54(b) *final* judgment (*see* A267 (D.I. 612); A401). *See* 458 F. App'x at 912 (citing § 1295(a)(1) as sole basis for jurisdiction); Nova *Dow I* Br. 1 ("This Court has exclusive jurisdiction over NOVA's appeal pursuant to 28 U.S.C. § 1295(a)(1)."); *cf. Nova Chems.*, No. 13-cv-1601, ECF No. 1 ¶ 7 (D. Del. Sept. 23, 2013) (Nova characterizing 2010 judgment as "final"). "[A] judgment entered pursuant to Rule 54(b) has the same finality as any other judgment." *Johnson v. Orr*, 897 F.2d 128, 130-31 (3d Cir. 1990); *see Brown*, 654 F.3d at 355 (Rule 54(b) judgment "is final for all purposes"). This Court's decision in *Dow I*, which the Supreme Court did not disturb, thus resulted in a fully final judgment. Nova may not relitigate issues or seek reversal of orders finally resolved in that appeal.

Nova's cases (Br. 37-39) also provide no basis to conclude that indefiniteness is within the scope of this appeal. *Amado v. Microsoft Corp.*, 517 F.3d 1353 (Fed. Cir. 2008), is inapposite, for the present appeal does not concern application of the "mandate rule" following a remand to the district court. *See id.* at 1363-64. Moreover, unlike in *Amado*, this Court in *Dow I* did not leave open the indefiniteness issue by "explicitly reserv[ing] or remand[ing]" the question to the district court. *Id.* at 1364. Rather, this Court resolved all of the issues raised on appeal—including indefiniteness—and left nothing for the district court to do as to

those issues. *See* 458 F. App'x at 911, 917-20, 921. Nor do the other decisions upon which Nova relies permit this Court to revisit indefiniteness here, as they either involved an initial *interlocutory* appeal followed by a second appeal, *see John Simmons Co. v. Grier Bros. Co.*, 258 U.S. 82, 89 (1922); *Mendenhall v. Barber-Greene Co.*, 26 F.3d 1573, 1580-81 (Fed. Cir. 1994), or an initial judgment that was *vacated and remanded* for further proceedings, *see Fresenius USA, Inc. v. Baxter Int'l, Inc.*, 721 F.3d 1330, 1341-45 (Fed. Cir. 2013).[7] Here, in contrast, the prior appeal involved a Rule 54(b) *final* judgment that was *affirmed* in all respects. This appeal is not an avenue for relief from that judgment.[8]

B. Alternatively, This Court Must Follow *Dow I*'s Indefiniteness Holding As Law Of The Case

Even if indefiniteness were within the scope of this appeal, *Dow I* would foreclose reconsideration of that issue. As Nova acknowledges (Br. 39-40), *Dow I* is at least law of the case, and the only possibly applicable exception to that doctrine requires an intervening change in controlling law. *See, e.g.*, *Mendenhall*,

[7] *Harper v. Virginia Department of Taxation*, 509 U.S. 86, 89 (1993), and *Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 1368 (Fed. Cir. 2004), stand only for the proposition that an intervening Supreme Court decision applies to pending *open* cases; neither suggests that such a decision reopens a judgment that is already *final*.

[8] Because this Court lacks jurisdiction to revisit indefiniteness, no "law of the case" question arises (*see* Nova Br. 39-40). "The law of the case … regulates judicial affairs *before* final judgment," *Mendenhall*, 26 F.3d at 1582 (emphasis added), and has nothing to do with obtaining relief from a final judgment.

26 F.3d at 1582.[9] But that exception applies only where the prior decision is in actual "conflict with a subsequent decision by this court sitting en banc or by the Supreme Court," *E-Pass Techs., Inc. v. 3Com Corp.*, 473 F.3d 1213, 1219 (Fed. Cir. 2007), and there is no such conflict here: In holding Dow's patents not indefinite, this Court in *Dow I* did not invoke or apply the "amenable to construction" or "insolubly ambiguous" standard that the Supreme Court disapproved in *Nautilus*. Instead, it held Dow's patents not indefinite because persons of reasonable skill in the art would understand their meaning. Because that holding is fully consistent with *Nautilus*, the law of the case remains that Dow's patents are not indefinite.

In *Nautilus*, the Supreme Court held that it is not "sufficient that a court can ascribe *some* meaning to a patent's claims" and that the standard for indefiniteness is not whether a patent's claims were "insolubly ambiguous" or "amenable to construction." 134 S. Ct. at 2130. The Court explained that those formulations "lack the precision § 112, ¶ 2 demands," and "can breed lower court confusion," citing the decision in *Every Penny Counts, Inc. v. Wells Fargo Bank, N. A.*, 2014 WL 869092, *4 (M.D. Fla. Mar. 5, 2014), where the district court had concluded

[9] Nova also quotes in passing an exception applicable where the prior decision both is "'clearly erroneous and would work a manifest injustice'" (Br. 39 (quoting *Gindes v. United States*, 740 F.2d 947, 950 (Fed. Cir. 1984)), but it makes no attempt to show either clear error or "manifest injustice" apart from the alleged change in the law purportedly worked by *Nautilus*.

that the claim term "account" "might mean several different things" and that no "informed and confident choice" was available, but ruled "that 'the extent of the indefiniteness ... falls far short of the 'insoluble ambiguity' required to invalidate the claim.'" 134 S. Ct. at 2130 & n.8.

Nova, however, concedes (Br. 43), as it must, that *Dow I never invoked* the "insolubly ambiguous" or "amenable to construction" standard that *Nautilus* rejected. Instead, this Court relied on a formulation of the indefiniteness standard that tracks the one *Nautilus* adopted: The "requirement is satisfied where 'one skilled in the art would understand the bounds of the claim when read in light of the specification.'" *Dow I*, 458 F. App'x at 917 (quoting *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001)); *see Nautilus*, 134 S. Ct. at 2129 ("patent's claims, viewed in light of the specification and prosecution history, [must] inform those skilled in the art about the scope of the invention with reasonable certainty"). This Court echoed this standard in rejecting Nova's indefiniteness arguments, explaining that "Dow established that *one of ordinary skill in the art would know* at which particular part along the curve the slope of the stress/strain curve should be measured," *id.* at 918 (emphasis added), and that "*one of ordinary skill in the art would … realize* that the slope of the strain hardening should be determined in English units," *id.* at 920 (emphasis added). And this Court ultimately held that "because *one of skill in the art would understand the*

bounds of the claims, the district court correctly rejected Nova's indefiniteness challenge." *Id.* (emphasis added). Thus, in contrast to cases like *Every Penny Counts*, the basis for this Court's decision in *Dow I* was *not* that Dow's claims are not "insolubly ambiguous"—it instead held that, to one of ordinary skill in the art, the claims could mean only one thing and thus are *not ambiguous at all*.

Nova likewise fails to show any conflict with the Supreme Court's statement that "[i]t cannot be sufficient that a court can ascribe *some* meaning to a patent's claims." *Nautilus*, 134 S. Ct. at 2130 (emphasis added). Nova wrongly contends (Br. 3) that in *Dow I*, this Court held that "claims were definite so long as *some meaning* could be ascribed to a claim, even if reasonable people might disagree about that meaning" (emphasis added). *Dow I* did not even use the term "some meaning," and did not uphold the patents because "some meaning could be ascribed" to their claims. Rather, it concluded that the patents have *a single meaning*, which would be understood by persons of ordinary skill in the art. That determination comports with the *Nautilus* standard. *See* 134 S. Ct. at 2129.

Nova fares no better in asserting (Br. 43-44) that this Court in *Dow I* concluded that the claims were definite "despite the fact that no informed and confident choice is available among the various places" where the slope could be measured or the various units that could be used. This Court actually held that

persons skilled in the art would know where to measure the slope on the curve and would use English units. 458 F. App'x at 920.

Unable to identify a conflict between *Nautilus* and *Dow I*, Nova seeks to manufacture one by suggesting (Br. 43-44) that because *Dow I* cited *Exxon*, *see* 458 F. App'x at 917, 919-20, while *Nautilus* disapproved language from it, *see* 134 S. Ct. at 2130 n.9, *Dow I* must have gotten the law wrong. But *Dow I* did not rest on either of the passages in *Exxon* that could be viewed as being in tension with *Nautilus*, and this Court's passing references to them cannot establish a conflict.

First, although *Dow I* quoted *Exxon*'s statement that a claim is not necessarily indefinite even though its meaning is an issue "over which reasonable people will disagree," 458 F. App'x at 920 (quoting *Exxon*, 265 F.3d at 1375), this Court did *not* conclude that the meaning of Dow's claims is subject to reasonable disagreement. Rather, this Court upheld the claims as expressing a *single* meaning that an ordinarily skilled artisan would be able to determine. Indeed, this quotation of *Exxon* followed this Court's conclusion that Nova had "*not presented any evidence*" to support its argument that English units were inappropriate based on another variable ("melting index") reported in metric units. *Id.* Thus, even if that

portion of *Exxon* is no longer good law, it is irrelevant here because this Court rejected Nova's argument due to lack of evidence.[10]

Second, Nova notes that *Dow I* quoted *Exxon* for the proposition that a term is not indefinite unless "'no narrowing construction can properly be adopted' to interpret the claim," *id.* at 917 (quoting *Exxon*, 265 F.3d at 1375),[11] but ignores that this Court did not resort to any "narrowing construction" in holding the claims not indefinite. Instead, this Court read the claims in light of the specifications and concluded that they have a single, unambiguous meaning that is ascertainable by persons of ordinary skill in the art. *See id.* at 918-20.[12]

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[10] In any event, the "reasonable persons will disagree" language does not suggest that *Dow I* applied the "insolubly ambiguous" standard *sub silentio*. That "*reasonable persons* will disagree" in patent cases simply means that parties and experts may present reasonable conflicting claim-construction arguments that a court must resolve, not that *persons of ordinary skill in the art* will disagree over the construction of the challenged claims. *See generally Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 387 (1996) (recognizing that district courts often must resolve reasonable disagreements between experts when construing claims).

[11] Nova asserts (Br. 44) that this is "the identical language of *Exxon* cited by the Supreme Court with disapproval in footnote 9 of … *Nautilus*," but it is clear from context (specifically, the sentence to which footnote 9 is appended) that the Court's disapproval was focused on the phrase "insolubly ambiguous"—not the reference to a "narrowing construction." 134 S. Ct. at 2130 & n.9.

[12] Nova also asserts (Br. 43) that the *district court's* indefiniteness ruling conflicts with *Nautilus*, but any such conflict is irrelevant: This Court reviewed the district court's indefiniteness determination *de novo*, 458 F. App'x at 917, and it is *this Court's* conclusion that would be law of the case. *See, e.g.*, *Reitz v. Shinseki*, 561 F. App'x 922, 925 (Fed. Cir. 2014) ("Under the law of the case doctrine, both the district court and the court of appeals generally are bound by findings of fact and conclusions of law *made by the court of appeals in a prior*

Nautilus thus did not change the law in any way that conflicts with *Dow I*'s holding that Dow's patents are not indefinite. There is no basis to revisit indefiniteness here.

C. Even If This Court Revisits Indefiniteness, Nova's Arguments Fail On The Merits

Even if the question of indefiniteness were properly on appeal (*but see, supra*, Part I.A) and even if this Court were not bound by *Dow I* (*but see, supra*, Part I.B), this Court still should affirm. Rather than offer a new *Nautilus*-based justification for revisiting *Dow I*'s indefiniteness determination, Nova merely recycles (Br. 2; *see id.* at 44-54) the same arguments that this Court rejected in 2012: that "the patents-in-suit are missing a key figure that would have specifically informed the public (a) where the slope of the strain hardening curve for a claimed parameter should be measured and (b) what units should be used in that measurement." But nothing in *Nautilus* disturbs this Court's conclusion that, in light of the specification and prosecution history, a person of ordinary skill would understand the scope of the claims with reasonable certainty.

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appeal of the same case.") (emphasis added; citation omitted); *accord Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1347 (Fed. Cir. 2012).

1. The Omission Of Figure 1 Would Not Prevent Persons Of Ordinary Skill In The Art From Determining The Slope Of Strain Hardening

As a threshold matter, Nova repeats (Br. 53; *see id.* at 2, 9-10, 12, 35, 45) the incorrect argument—which it has unsuccessfully advanced at every stage of this litigation—that Dow's patents "direct the reader to a Figure 1 to provide explicit guidance as to the particular location on the stress-strain curve for determining the 'slope of strain hardening' and the units employed in that measurement." This is a misreading of the patents. As this Court explained in *Dow I*, "the patents in suit merely state that Figure 1 was intended to depict 'the various stages of the stress/strain curve,' but they do not necessarily suggest that Figure 1 would depict the specific point along the curve at which the slope should be measured." 458 F. App'x at 918 n.11.

This Court in *Dow I* also rejected Nova's argument (Br. 53) that the omission of this figure renders it impossible to understand the SHC claim term. This Court noted that "Nova's own expert witness, Dr. Fuller, agreed with Dow's attorney that a typical stress/strain curve was 'very, very well known [to a] person of ordinary skill in the art … who worked with semi-crystalline polymers and polyethylene,' and that one of ordinary skill in the art would come across similar curves in relevant textbooks." 458 F. App'x at 918 (quoting A3464-65). This Court thus held that the omission of the figure "does not suggest that one of

ordinary skill in the art would not be able to determine the slope of the strain hardening for the SHC coefficient." *Id.* Nothing has happened since *Dow I* that could alter that conclusion.

2. Persons Of Ordinary Skill In The Art Would Know The Location At Which To Measure The Slope Of Strain Hardening

Contrary to Nova's contentions, the patents reveal, with reasonable certainty, the location for measuring the slope of strain hardening to one of ordinary skill in the art. *Dow I* held as much, and nothing in *Nautilus* suggests otherwise. Nova's attempts to contest that conclusion fail.

First, Nova is incorrect to assert (Br. 49) that *Dow I* "concluded that 'the mere fact that the slope may be measured in more than one way does not make the claims of the patent invalid,'" and thus to suggest that this Court acknowledged uncertainty about the method of measuring the slope. The fact that slope of a line can be measured in multiple locations was *irrelevant* to this Court's decision because "[t]he patents in suit teach that strain hardening occurs, or is reflected, at a specific region of the stress/strain curve" and "Dow established that one of ordinary skill in the art would know at which particular part along the curve the slope of the stress/strain curve should be measured." 458 F. App'x at 918-19. As *Dow I* explained, citing testimony of Dow's expert Hsiao, "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." *Id.* at 919.

Second, Nova wrongly argues (Br. 46) that "'best' tensile performance is … a subjective determination that depends upon the customer's desired tensile properties" and that "varies from product to product." Persons of ordinary skill in the art would know that, as an objective scientific fact, the maximum slope of the strain hardening curve would best indicate the true strain hardening property of a film. As this Court recognized, testimony from Dow's expert Hsiao established that "one of ordinary skill in the art would understand that during the initial portion of the strain hardening region, there is a mixture of drawing effects and strain hardening effects." 458 Fed. App'x at 919. It is for this reason that "one of ordinary skill in the art would know that the slope of strain hardening curve would have to be measured at its maximum value, which reflects the best tensile performance of the material." *Id.*

Nova resists this conclusion, arguing incorrectly (Br. 16), as it did in *Dow I* (Nova *Dow I* Br. 28), that the patents do not disclose that the slope must be measured at its maximum value because Dow allegedly used a different technique to generate SHC data in a declaration to the PTO during the prosecution of the patents-in-suit, and that applying this method to the declaration data would yield SHC values for prior art resins that would exceed the claims' threshold of 1.3.

This argument fails because it relies entirely on the testimony of Nova's expert Fuller, who *admitted* that when he analyzed the data from the declaration, he "changed" the method, so that he did *not* use Hsiao's method (A3547-51). Nova has no evidence that Hsiao's method conflicts with Dow's declaration to the PTO.

Third, Nova's attacks on Hsiao's methodology fail. Nova characterizes (Br. 15) "maximum slope" as Hsiao's "own mathematically defined 'maximum slope' … based on a computer algorithm he developed for this litigation," but Nova's expert Fuller admitted that a stress/strain curve would have only "one maximum" slope and that "persons in the art know how to determine maximum slopes" (A3545; A3601-02).

Nova's argument (Br. 45) that a stress strain curve has "some curvature" and does "not have a single slope" is irrelevant for the same reason. In fact, that curvature explains why Nova is wrong to criticize Hsiao's approach for permitting his slope lines to "cross the stress/strain curve" (Br. 15) and thus for purportedly not using a line that was "parallel to the strain hardening region," as instructed by the patent (Br. 46-47). The slope line Hsiao used intersected the stress/strain curve *because* the curve was not straight—*i.e.*, it was not a line, and would therefore not be expected to never intersect a line that is parallel at one region. There is no dispute that the lines were parallel at the location of the maximum slope.

Fourth, Nova is likewise wrong to argue (Br. 16), as it did in *Dow I* (Nova *Dow I* Br. 29), that Hsiao's testimony is "unsubstantiated" because he agreed that "the only thing [the jury] can rely on is [his] word that that's what a person of ordinary skill in the art would have done." Hsiao's testimony merely acknowledges that the jury could rely on his expert opinion. It does not negate his testimony (A2389-91) that the patents' specifications disclosed information supporting the use of maximum slope. Nothing in *Nautilus* suggests otherwise.

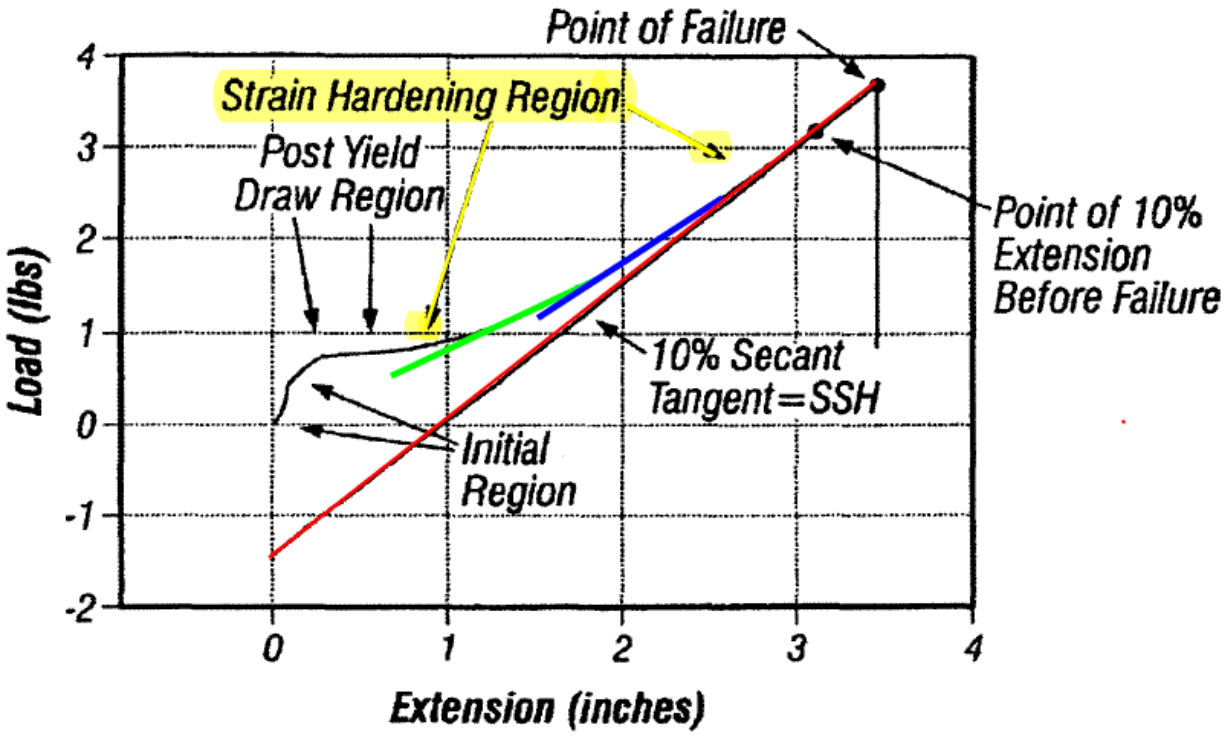
Fifth, Nova incorrectly asserts (Br. 45) that, because this Court stated that SHC was "a new Dow construct, not previously seen in the art," 458 F. App'x at 918, the maximum-slope method would not have been known to persons of ordinary skill in the art. This argument confuses SHC with slope of strain hardening. While SHC is a new *coefficient* Dow developed, there is no dispute that the patents-in-suit teach exactly how to calculate that coefficient from the slope of strain hardening and another property called "melt index":

> 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/l0 minutes.

A307 (6:45-50). Unlike SHC, the concept of strain hardening was well known to persons of ordinary skill in the art, as were the other components of the formula for SHC set forth in the patents. *E.g.*, A11522-23. The patents-in-suit instruct persons

of ordinary skill in the art to measure the slope in the strain hardening region and how to do so. A307 (6:87:25). While Nova complains (Br. 12-13) that the patents do not explicitly disclose *where* in the strain hardening region to measure the slope, that has nothing to do with whether the concept of the strain hardening was known in the art. In any case, as this Court already correctly held, persons of ordinary skill would have known to measure the slope of strain hardening at the area of maximum slope. *See* 458 F. App'x at 919.

Sixth, Nova also has no basis to revive its contention (Br. 46) that no one "had ever actually used … 'maximum slope'" prior to Dow's expert. To the contrary, the record shows that Dow employees recorded the slope of strain hardening using the maximum slope. While Nova contends (Br. 48) that Dow used different methods (which it labels "final slope method," "10% secant tangent method," and "most linear method"), each of those methods is simply a different way of determining the maximum slope: The final slope, the 10% secant tangent slope, and the most linear slope all typically occur at the same place—at the end of the curve where the maximum slope is located. *See* A2435-36 (final slope); A2558; A2756-57 (10% secant); A2580-82 (most linear slope). For example, Nova relies (Br. 14) on the following figure as an illustration of "10% secant tangent slope":



A6618. As the figure shows, the "10% secant tangent slope" is also the maximum slope of that curve. A1653.

Nova contends (Br. 15-16) that maximum slope "will yield values higher than [the] four other slope locations used by Dow scientists," but the record shows that this result would occur only in limited situations where the curve exhibits "end effects" (or "pre-break effects")—where partial stretching or tearing of the sample during testing artificially lowers the slope of strain hardening, so that the maximum does not occur at the end of the stress/strain curve. A2435-36. Persons of ordinary skill in the art know, however, that such deviations reflect sample behavior other than strain hardening, such as slipping or shredding of the sample, and they therefore would not measure the slope of strain hardening at that point. A1309-10;

A2436-40; A2447-48. Instead, they would have known either to measure the slope where it was not artificially depressed—*i.e.*, the maximum slope—or to re-run the test to get curves without pre-break effects, like the curves above. A2439-41; A2445-47. Hsiao testified that when a person of ordinary skill measures slope of strain hardening on a curve with a pre-break effect where there is a region in which the slope decreases, "he or she will still try to find out the maximum slope still in the later part that curves, but definitely not that region." A2439-40.

Finally, Nova is incorrect (Br. 12 n.4, 13) that Dow scientists used a fourth method, which Nova calls the "early slope method," to determine slope. There is no evidence that anyone used such a method to determine slope of strain hardening for the purpose of measuring the SHC. Nova's citation (*id.*) to an internal Dow spreadsheet (A6831)—which was not the subject of any testimony at trial—is unavailing. Nova contends (Br. 12 n.4) that a value in the spreadsheet labeled "S.S.H._b" is the slope "immediately after the draw plateau," but the spreadsheet itself defines the slope of strain hardening ("SSH") as the slope *at the end of the curve*, not early slope. A6831 (SSH is "the slope of strain hardening, *i.e.*, the slope of the tensile curve just prior sample break"). In fact, the spreadsheet calculates "SHC" using "SSH_a," a "Pooled Average" of the "SSH" values, not "SSH_b." A6835; A6839.

Nova thus has provided no basis for this Court to depart from its prior conclusion that "one of ordinary skill in the art would know that the maximum slope of the stress/strain curve was the appropriate value for calculating the SHC coefficient." *Dow I*, 458 F. App'x at 919.

3. Persons Of Ordinary Skill In The Art Would Be Able To Determine The Units In Which The Slope Of Strain Hardening Is Measured

Nova's final indefiniteness argument, which again is unconnected to *Nautilus*, merely repeats its meritless contention (Br. 51) that Dow's patents are indefinite because they "do not specify particular units for the SHC coefficient." This Court rejected that argument in *Dow I*, holding that persons of ordinary skill in the art would know from reading the claims and specifications that pounds per inch is the only reasonable unit for measuring the slope of strain hardening. 458 F. App'x at 920. As this Court explained, "the specification teaches that the stress/strain test is conducted with an Instron Tensile Tester 'at a crosshead speed of 1 *inch/minute*,'" *id.* (emphasis added) (citing A307 (6:26)), and *both* parties' experts "agreed that the user manual for the Instron Tensile Tester, available when the patents in suit were filed, specified that when the crosshead speed is inches per minute, the units for load and elongation are *pounds and inches (English units)*,

unless expressly specified otherwise," *id.* (emphasis added); *see* A2407-09; A3558-59.[13]

Nova contends (Br. 51) that the Instron Tensile Tester was "not incorporated by reference into the patents in suit," but the patents instruct persons of ordinary skill in the art to test "tensile properties," including slope of strain hardening, "*on an Instron Tensile Tester* at a crosshead speed of 1 inch/minute." A307 (6:24-29) (emphasis added). As Hsiao testified, the patents thus directed persons of ordinary skill to the Instron manual (A2401-02), which is undisputedly prior art (A10063; A10065). And *Nova's own expert* Fuller relied on an Instron manual as evidence of the knowledge of persons of ordinary skill in the art with respect to the units for slope of strain hardening. A3534-35. Thus, there can be no dispute that persons of ordinary skill would have known the contents of the Instron manual and that pounds per inch was the appropriate unit.

Nova next contends (Br. 51) that "Dr. Hsiao admitted that a skilled artisan would not look at this *software user manual* to determine the units" (emphasis added). But this Court in *Dow I* referred to teachings derived from the *device* manual. 458 F. App'x at 920. For example, Hsiao testified that the following table

[13] *See also* 458 F. App'x at 920 ("the manual … showed that when the user conducts the stress/strain test using crosshead speeds in inches per minute, the output measurement is reported in *English units*") (emphasis added); *id.* ("Table 3 of the patents in suit also reports the output of the Instron Tensile Tester … in *English units*.") (emphasis added); A10598; A2703-05; A325 (tbl. 3); A3556-57.

from the *device manual* instructs users to report the output of the Instron machine in English units (pounds/inch) when the crosshead speed is set to inches per minute, as per the patents-in-suit (A2703-05):

Table 6-8. Operating Units for Self Identified Load Cells and Frames

Parameter	English Units	Metric Units	S.I. Units
* Load	Pounds (LB)	Grams Force (GF)	Newtons (N)
	KLB (LB x 10^3) LB (LB x 10^0) MLB (LB x 10^{-3})	KKGF (GF x 10^6) KGF (GF x 10^3) GF (GF x 10^0)	KN (N x 10^3) N (N x 10^0) MN (N x 10^{-3})
Extension	Inches (IN)	Millimeters (MM)	Millimeters (MM)
	IN (IN x 10^0)	MM (MM x 10^0)	MM (MM x 10^0)
Speed	Inches/Minute	Millimeters/Minute	Millimeters/Minute
	IN/MIN	MM/MIN	MM/MIN

* Load values are scaled by 1/Area when Area Compensation is ≠ 1.000.

A10598 (highlighting added). Nova's expert Fuller agreed that a separate table in the manual, on which he had relied, taught the same thing. A3558-59. In light of this instruction, it makes no difference whether, as Nova argues (Br. 51), the Instron manual would "permit the operator to report the output measurement in either metric or SI units," that *other* Dow patents used "various units in addition to pounds per inch," or that "Dow's own infringement tests were measured by Dow in metric units" before being converted to English units. Even if one could use *other units* in *other contexts*, the patents here taught pounds/inch by requiring a crosshead speed measured in inches/minute.

Nova also wrongly asserts (Br. 19) that it was "uncontroverted by Dow" that it would have been "both uncommon and highly irregular to mix English units for one term with metric units for another term in a single equation." In fact, Dow cited examples in which Nova's own expert Dr. Charles Stanley Speed mixed English units for one term with metric units for another term in a single equation. A3561.

Finally, Nova wrongly argues (Br. 19) that the patents do not teach English units because a *later* Dow patent (the '866 patent) "share[s] a virtually identical section entitled 'Determination of the Slope of Strain Hardening Coefficient,'" but reports slope of strain hardening in metric units. Not only is this extrinsic evidence vis-à-vis the patents-in-suit, but the '866 patent in fact *confirms* that English units should be used with respect to the patents-in-suit. The '866 patent directs that the crosshead speed for tensile testing be set in inches/minute, but then *specifically* converts the units to metric units for purposes of reporting the tensile measurements (including SSH). A6846; A6867. In contrast, the patents-in-suit do *not* specify that SSH should be reported in metric units, nor do they instruct the reader to convert the English units used in setting the crosshead speed. In fact, while the '866 patent reported all tensile measurements in metric units, the patents-in-suit reported all Instron tensile measurements in English units. *See* A311.

Nova thus provides no basis for this Court to depart from its conclusion that "one of ordinary skill in the art would realize that the slope of the strain hardening, as defined in the patents in suit, should be measured and reported in English units." 458 F. App'x at 920. The patents are not indefinite.

II. THE DISTRICT COURT'S DETERMINATION OF THE AMOUNT OF SUPPLEMENTAL DAMAGES IS AMPLY SUPPORTED BY THE RECORD

Nova's challenge to the *amount* of lost profits awarded as supplemental damages also should be rejected. To recover lost profits, a patent holder must establish that in the absence of the infringing conduct, it would have made the infringer's sales. *Siemens Med. Solutions USA, Inc. v. Saint-Gobain Ceramics & Plastics, Inc.*, 637 F.3d 1269, 1287 (Fed. Cir. 2011); *Wechsler v. Macke Int'l Trade, Inc.*, 486 F.3d 1286, 1293 (Fed. Cir. 2007). The patent holder may establish this "but for" causation by demonstrating "(1) a demand for the patented product; (2) an absence of acceptable non-infringing substitutes; (3) the manufacturing and marketing capability to exploit the demand; and (4) the amount of profit the patent owner would have made." *Siemens*, 637 F.3d at 1287 (citations omitted); *see Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978). This inquiry "requires a reconstruction of the market, as it would have developed *absent the infringing product*, to determine what the patentee would ... have made." *Grain Processing Corp. v. Am. Maize-Prods. Co.*,

185 F.3d 1341, 1350 (Fed. Cir. 1999) (emphasis added; citation and internal quotation marks omitted). Such a reconstruction is "by definition a hypothetical enterprise," *id.*, and therefore the plaintiff need only establish a "reasonable probability" that it would have made the asserted sales and profits but for the infringement, *id.* at 1349; *see, e.g.*, *Versata Software, Inc. v. SAP Am., Inc.*, 717 F.3d 1255, 1264-67 (Fed. Cir. 2013) (affirming lost-profits award based on hypothetical reconstruction of market); *Siemens*, 637 F.3d at 1288-89 (similar).

The district court found, following bench trial, that Dow established each of the "*Panduit* factors" (A19-24), and that Dow is therefore entitled to an award of lost profits (A29). Of the four factors, Nova disputes only sub-components of the third and the fourth. As to the third factor, Nova concedes that Dow was capable of *marketing* its ELITE product, but contends (Br. 54-62) that Dow lacked the "*manufacturing* … capability to exploit the demand" for ELITE during the supplemental-damages period, *Siemens*, 637 F.3d at 1287 (emphasis added). As to the fourth factor, Nova does not dispute the district court's adoption of the jury's implicit finding that Dow would have captured 72% of Nova's sales in the absence of the infringement, but argues only (Br. 62-64) that the district court abused its discretion in determining Dow's profit margin on its increased sales of ELITE. Neither argument has any merit.

A. The District Court's Finding That Dow Had Sufficient Manufacturing Capacity To Cover Nova's Sales Is Not Clearly Erroneous

The district court found that Dow "demonstrated by a preponderance of the credible evidence" (A8 n.2) that "but for NOVA's infringement, Dow would have begun the Supplemental Damages Period in the position of incumbent supplier (for the NOVA sales it would have captured)," and that thus "Dow would have planned for, and produced, the additional ELITE products" required to meet the demand that would have existed if Nova had not infringed (A22). As shown (*see supra*, at 14-19), there is overwhelming evidence to support the district court's factual finding that Dow was capable of obtaining the necessary raw materials and shifting its production schedule to facilitate the manufacture of the necessary amounts of ELITE. Nova fails to identify *any* error in that finding, let alone *clear* error.

1. Nova's Incumbency Argument Is Contrary To Law

Nova argues (Br. 60-61) that the district court was required to begin its accounting from the premise that *Nova*—the adjudged infringer—would have been the incumbent supplier at the beginning of the supplemental-damages period. But that argument inverts the foundational principle that a lost-profits analysis "requires a reconstruction of the market, as it would have developed *absent the infringing product*." *Grain Processing*, 185 F.3d at 1350 (emphasis added); *cf. Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc.*, 711 F.3d 1348,

1379-80 (Fed. Cir. 2013) (price-erosion damages "must measure price changes against *infringement-free* market conditions" and thus must be assessed from date of first infringement even where initial infringement occurred pre-notice and thus was not itself compensable).[14] Thus, in the "but for" world in which lost profits are determined, *SURPASS never existed*. And because there is no adequate non-infringing substitute for ELITE (A19-20),[15] the district court properly conducted its lost-profits analysis based on the jury's finding that Dow would have captured at least 72% of Nova's sales volume by the end of 2009 (A22-23), and that Dow therefore would have entered 2010 as the incumbent vis-à-vis those customers (A22). *See Micro Chem., Inc. v. Lextron, Inc.*, 318 F.3d 1119, 1125 (Fed. Cir.

[14] Nova's attempt (Br. 61) to avoid *Grain Processing* fails. That this Court did not there consider either supplemental damages or "the issue of incumbency in a post-trial accounting setting" (*id.*) is immaterial to the case's holding, which is that lost profits are calculated based on a hypothetical analysis of what would have happened in the market in the absence of infringement, 185 F.3d at 1350. It is similarly immaterial that this Court affirmed judgment for the defendant and declined to order an award of lost profits (Nova Br. 61), for this Court did so on the ground that the district court did not clearly err in finding that, in the hypothetical "but for" world, the defendant would have adopted a non-infringing alternative and the plaintiff therefore would have earned no additional profits. 185 F.3d at 1349, 1351, 1353-55. This case is the converse: the district court committed no clear error in finding that in the hypothetical world, Dow would have been the incumbent and would have planned to produce all the ELITE it could sell.

[15] Nova suggests (Br. 31, 61) that there existed adequate non-infringing alternatives, but this argument is not sufficiently presented to be preserved. *See, e.g.*, *Whitserve, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 19 n.4 (Fed. Cir. 2012).

2003) (fact-finder may infer that patentee in two-supplier market would have captured infringing sales).[16]

Nova's insistence (Br. 60) that the district court should have rested on the "reality … that NOVA, not Dow, was the incumbent" in 2009 thus misses the point. The lost-profits analysis is "by definition a hypothetical enterprise," *Grain Processing*, 185 F.3d at 1350, so which party *in fact* occupied the incumbency position at any given point has little relevance. For the same reason, it is irrelevant that Dow might have struggled to capture Nova's customers if it had started from scratch in 2010 (Br. 61), and that "Dow offered no proof of any *actual consideration or planning* for the drastic shifts in production postulated by Mr. Hoffman, dislocation of customers, shifts in product transportation costs, and the like" (*id.* at 57) (emphasis added). In the hypothetical "but for" world, where Nova never infringed, by the start of 2010 Dow was *already* the incumbent, had *already* captured at least 72% of Nova's sales, and was *already* prepared to produce enough ELITE to meet market demands. Nova has not shown and cannot show otherwise, and thus it has not identified any error in the district court's fact-finding.

[16] Nova ignores both the jury's finding and the tendency of customers not to change suppliers (*see supra*, at 15-16 & n.4) when it asserts (Br. 61) that "there is no basis in fact to conclude that, even in a 'but for' world, that [*sic*] Dow would have been the incumbent during the supplemental damages period."

Moreover, as the district court observed, Nova's approach would "give [Nova], an adjudicated infringer, a benefit of substantially reduced damages solely due to the happenstance that the jury trial took place during, and not after, infringement." A23. Had the jury trial occurred in 2012, after the patents expired, the jury would have decided damages based on the assumption that Nova's infringing products were *not* in the market for the *entirety of 2002-2011*. Under Nova's approach, however, the district court was required, when calculating supplemental damages, to assume that Nova was *hypothetically licensed from 2002-2009*. There is no basis to reward an adjudged infringer like Nova in that manner.

2. Unlike In Nova's Authorities, The Evidence Here Shows That Dow Had Pre-Existing Capacity To Meet Demand

Nova also argues that Dow needed to show that it had idle capacity to meet increased demand for its ELITE product. Nova's lead authorities (Br. 55-56)—two decades-old unpublished district-court decisions that no appellate court has relied upon for any relevant proposition—do not support the existence of clear error here. The court in *Polaroid Corp. v. Eastman Kodak Co.*, 1990 WL 324105 (D. Mass. Oct. 12, 1990), adopted the same "reasonable probability" standard that the district court applied below, *id.* at *40; A18, and recognized that a patentee need only show "that it had a[t] least the potential capability to meet the demand," not that "it had empty factories waiting for additional work," 1990 WL 324105, at *39. Based

on its review of the record in that case, the court concluded that Polaroid had not established a reasonable probability that it could have expanded its production capacity quickly enough to capture *all* the lost profits that it claimed. *Id.* at *49-56. Similarly, in *Smith International, Inc. v. Hughes Tool Co.*, 1986 WL 4795 (C.D. Cal. Mar. 12, 1986), *vacated as moot*, 839 F.2d 663 (Fed. Cir. 1988), the evidence showed that Hughes lacked access to the capital that would have been required to expand its production and sales capacities. *Id.* at *18.[17]

Here, in contrast, the evidence supports the district court's findings that Dow had pre-existing ELITE capacity to meet the increased demand and that Dow was both willing *and* able to decrease its production of "capacity-filler" HDPE in order to produce more high-margin ELITE. A21-22; A12207-08; A12081-91; A12137-38; A12141; A122909; A13938-39. Indeed, Dow maintained only short-term or spot-sale contracts to supply HDPE, precisely in order to retain the option to shift a reactor from HDPE production to ELITE production on short notice, whenever an opportunity to make a sale of ELITE arose. A12094-97; A12102. And the evidence likewise supports the district court's finding (A22) that Dow's ELITE

[17] This Court has previously chided a party for its "surpris[ing] … reliance on *Smith International* … as authority," observing that "[t]he district court's judgment in that case was vacated and the case was remanded with instructions to dismiss the complaint because the case became moot on appeal." *Datascope Corp. v. SMEC, Inc.*, 879 F.2d 820, 825 (Fed. Cir. 1989) (citing *Smith Int'l*, 839 F.2d at 664).

production would not have been constrained by the availability of octene: Absent Nova's infringement, Dow would have contracted in advance for the approximately 5 additional kilotons that it would have needed to meet the demand for ELITE (A12221; A12243-45; A12289-90), which was only 2% of Dow's overall annual octene budget (*see* A12265; A12290). And the supply disruptions that Dow experienced in 2010-2011 were "normal industry operating upsets" (A12226)—minor variations for which Dow would have been able to compensate by temporarily shifting some of its customers from octene-based Dowlex to a pre-qualified hexene-based formulation (A12219-24; A12226-27; 12243-44).

Thus, in contrast to *Polaroid* and *Smith International*, the record here amply supports the district court's finding that it was reasonably probable that Dow would have been able to produce sufficient ELITE to meet the increased demand of the "but for" world in which Nova did not infringe.

3. Nova Identifies No Evidence That Undermines The District Court's Factual Findings

The evidence upon which Nova relies (Br. 58-60) does not call into question the district court's factual findings, let alone establish clear error.

First, although "Dow's plants were running 'flat out'" for much of the supplemental-damages period (Br. 58), that does not imply that they "lacked excess ELITE production capacity" (*id.*). As discussed, Dow's business strategy allowed it to cease producing low-margin HDPE on short notice in order to free up

production capacity for high-margin ELITE, and the district court reasonably concluded that Dow would have done so if presented the opportunity. *See* A12207-08; A12081-91; A12137-38; A12141; A122909; A13938-39; A12094-97; A12102.

Second, that "changed circumstances" led "Dow to shift to making *less* ELITE and *more* HDPE *at times* during the supplemental damages period" (Br. 58 (last emphasis added); *see id.* at 59-60) does not show that Dow would have lacked the requisite capacity in the hypothetical "but for" world. The shifts to which Nova refers were temporary (they lasted weeks, not years) and thus would not have impaired Dow's ability to manufacture sufficient ELITE over the supplemental-damages period as a whole. A12226. Nova, moreover, ignores that in the "but for" world, Dow would have been the incumbent supplier in 2009, and thus would have planned to produce additional ELITE, including by contracting for the necessary octene. A12221; A12243-45; A12289-90. Thus, regardless of the value Dow may have placed on its food-and-beverage HDPE customers (Nova Br. 58), there is ample evidence that Dow would not have turned down a high-margin ELITE sale in order to make a low-margin HDPE sale (*e.g.*, A12102; A12155; A12216; A12238-39).

Third, Nova is wrong to assert (Br. 59) that the district court lacked support for its finding (A14; A22) that Dow could have produced sufficient ELITE despite

2010's short-term octene-supply disruptions. Although Dow acknowledged that it would have been unable to secure additional octene *in the real-world conditions* that prevailed in 2010 (A12263-65; A12276-79), that was because of Dow's long-term octene-supply contracts, which it could not have altered *in the real world* in mid-2010 (A12263; A12276-77). That constraint is not present in the "but for" world, where in 2008-2009 Dow would have been able to plan in advance to acquire the additional 5 kilotons of octene it would have needed to support additional ELITE production. A12289-90. Indeed, Dow could have done so simply by *not reducing* the size of its contract at the end of 2009. *Id.* And once Dow had locked in such an advance contract, the minor 2010 octene-supply disruptions would not have prevented it from producing sufficient ELITE to meet demand. *Id.*

Fourth, Nova is likewise wrong to dispute (Br. 59) Dow's showing that it was capable of freeing up octene reserves by shifting customers from octene-based Dowlex to a hexene-based alternative. The district court did not rest its manufacturing-capacity determination on this evidence, but on the well-supported finding that Dow could have acquired additional octene to meet its needs. *See* A14; A22. In any event, while Nova asserts that "some" customers might not have

agreed to such a change,[18] the record shows that other Dow customers would have accepted the move (A12219-24; A12226-27).

Nor, *fifth*, can Nova show (Br. 32-33, 59) that Dow would have been unable to procure the necessary octene in the "but for" world on the basis of its real-world decision not to secure more octene during the pendency of this litigation and alleged failure "to show any actual planning for additional ELITE production during the supplemental damages period." This contention was not presented to the district court, and thus is waived. *See, e.g.*, *Merial Ltd. v. Cipla Ltd.*, 681 F.3d 1283, 1296 (Fed. Cir. 2012). The argument is also wrong, for it ignores that the lost-profits analysis occurs in the "but for" world in which there is no infringing SURPASS and thus there is no litigation. In *that* world, Dow would already have been the incumbent in 2008 and 2009, and would not have had to plan for sudden growth in 2010 through litigation success. It simply would have continued selling to the larger customer base that it would have secured in the absence of Nova's infringement.[19]

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[18] Nova identified only a single such customer, Paragon, and the parties disputed whether that defection was due to Dow's conduct or to the availability of Nova's infringing product. A12387-88.

[19] Even in the real world, obtaining a substantial increase in sales as the result of litigation would have required a permanent injunction—an uncertain result that Dow cannot reasonably have been expected to plan for years in advance. Indeed, no injunction issued here. *See* A265 (D.I. 603).

Finally, contrary to Nova's assertion (Br. 56), the district court did not "ignore" its evidence of "market forces." Rather, the court weighed *all* the evidence and concluded that Dow's "reconstruction" of the "but for" world—in which Dow would have continued in 2010 and 2011 the sales pattern that the jury found would have existed in 2009—was a more reasonable hypothetical analysis than the one Nova presented, in which Dow's ELITE production would have dropped precipitously on New Year's Day 2010. The district court did not clearly err by rejecting Nova's *argument* in favor of Dow's contrary *evidence*.

4. Nova's Criticism Of Dow's Expert Is Unfounded

Nova's complaints (Br. 57-60) about the testimony of Dow's expert Hoffman are also misplaced. The district court did not rely on Hoffman's opinions in reaching its well-supported finding that Dow had sufficient production capacity to meet demand (*see* A12-14, A20-22). Nova cannot demonstrate clear error by criticizing portions of the evidence on which the judgment *does not depend*. *See Anderson*, 470 U.S. at 574; *cf. FMC Corp. v. Hennessy Indus., Inc.*, 836 F.2d 521, 527 (Fed. Cir. 1987) (appellant failed to show clear error by challenging infringement theory on which district court did not rely).

In any event, as shown (*see supra*, at 17-19), the evidence that Dow prioritized high-margin ELITE over commodity HDPE is not a legal "theory" (Nova Br. 57), but an evidentiary *fact* about Dow's corporate strategy (A12081-91;

A12137-38; A12141; A12209). Nova characterizes the "waterfall" concept as a term Hoffman created for litigation, but the district court found, based on testimony from Dow's *fact* witnesses, that Dow used the "'waterfall' production system" as part of its regular "business practice of displacing HDPE production to free up capacity for ELITE or other high profit-margin products." A21 (citing A12141).[20] And contrary to Nova's assertion that this finding is somehow "speculative" or "unrealistic" (Br. 57),[21] the evidence discussed above provides ample basis for the district court to conclude that there is a reasonable probability that Dow would have employed the "sell out and sell up" strategy to maximize ELITE production in 2010-2011.

B. The District Court Acted Well Within Its Discretion In Determining How Best To Calculate Dow's Profit Margin

Nova's final argument on appeal (Br. 62-64) intimates that the district court "committed legal error" by determining Dow's hypothetical profit margin on the basis of estimated (rather than actual) cost figures, but it has long been settled that lost profits may be determined on the basis of estimated costs. *E.g.*, *Graves v. Kemsco Grp., Inc.*, 864 F.2d 754, 756 (Fed. Cir. 1988) (affirming lost profits award

[20] Nova in fact used the same methodology for its manufacturing plants. A12430-32.

[21] Nova's characterization of Hoffman's damages theory as a mere "accountant's model" (Br. 57) relies only on the testimony of Nova's own damages expert (A12467-68), which the district court as fact-finder was entitled to reject.

based in part on "estimated" "cost of future remedial efforts"); *Paper Converting Machine Co. v. Magna-Graphics Corp.*, 745 F.2d 11, 22 (Fed. Cir. 1984) (affirming finding that patentee's proffered "61.8 percent cost rate generates a 'reasonably fair estimate' of [patentee's] total lost profits" where "reasonable and not wholly without basis"). Nova identifies no contrary authority, and indeed effectively *admits* that it has no legal argument against the district court's profit-margin finding by emphasizing (Br. 64) that it is *not* asking this Court to hold that "a patentee should be prohibited in all cases from relying on projected cost estimates."

Unable to identify any legal error, Nova is reduced to quibbling with the district court's factual finding (A23-24) that Dow's profit margin would have been $0.37/pound—but that finding is neither "illogical" nor "implausible," *Trebro Mfg.*, 748 F.3d at 1166, and it is indeed well supported by Hoffman's expert analysis (*see* A12329; A14016). Nova asserts (Br. 63) that Hoffman "understate[s] Dow's costs and overstate[s] Dow's profit margin" because he relies on estimates that "contain[] inaccurate and low estimated ethylene cost figures," but Nova omits to mention that the figures on which Hoffman relied were Dow's *official* quarterly estimates of its standard costs (A12479). These estimates are the *best* evidence of Dow's costs for purposes of determining lost profits, for they reflect *only* the incremental costs that Dow would incur for each additional pound of ELITE

produced—omitting fixed costs that Dow would have incurred regardless of whether it increased production. *See* A12340; *Paper Converting*, 745 F.2d at 22 ("fixed costs—those costs which do not vary with increases in production, such as management salaries, property taxes, and insurance—are excluded when determining profits"). Indeed, Dow's official estimates are *so* reliable that *Nova's own expert* relied on them in reaching his profit-margin calculation in the 2010 trial. A12335.

In contrast to the reliable official estimates on which Hoffman based his opinion, Nova's expert Tanger formed his opinion based on "Standard Cost – Trade" figures that, as Hoffman explained, *improperly included substantial fixed costs*. A12337-38 (Tanger's cost figures included, among other things, "manufacturing variances from upstream business units at Dow"). While Tanger admitted that *he did not know* whether certain components of the cost figures on which he relied were fixed or incremental (A12570-71), his own testimony in fact confirmed that his numbers *must* have included fixed costs: The costs Tanger used were between 4 and 7 cents higher per pound than Hoffman's figures, but Tanger *admitted* that the only *incremental* cost suggested as a potential explanation for that difference (variance between actual and estimated ethylene costs at Dow's Fort Saskatchewan facility, A12558-59) "*cannot account for the increase*[]" in costs between the figures (A12572-73 (emphasis added)). Thus, having eliminated

the only evident *incremental*-cost explanation for the difference between the cost figures, it follows that (as Hoffman testified) Tanger relied on cost figures that included fixed costs.

Based on this evidence, the district court sided with Dow on this factual dispute, adopting Dow's incremental profit margin calculation and rejecting Nova's "Standard Cost – Trade" figures. A23-24.[22] The district court was well within its discretion in doing so.[23]

III. THE DISTRICT COURT ERRED AS A MATTER OF LAW IN DENYING ENHANCED SUPPLEMENTAL DAMAGES DUE TO NOVA'S WILLFUL POST-JUDGMENT INFRINGEMENT

While the district court correctly calculated the base amount of supplemental damages, it erred as a matter of law in denying Dow's request to enhance those damages due to Nova's willful infringement during the 16-month period after the district court denied Dow's request for a permanent injunction on July 30, 2010, until the asserted patents expired on October 15, 2011. It is well established that

[22] Nova asserts (Br. 64) that it is a "clear abuse of discretion" to rely on cost estimates when "actual raw material standard costs" are available, but ignores that the "Standard Cost – Trade" figures do not represent "actual *raw material* standard costs" since they include fixed costs.

[23] Even if the district court abused its discretion in relying on Hoffman's analysis (it did not), Nova's assertion (Br. 63 & n.12) that Hoffman overstated Dow's lost profits by $11.3 million (*more than 40%* of the total award) is itself overstated and unsupported. A remand thus would be necessary so that the district court could redetermine Dow's profit margin and recalculate the supplemental lost-profits award.

damages, including supplemental damages, may be enhanced where an infringer acts willfully. *See* 35 U.S.C. § 284 ("[T]he court may increase the damages up to three times the amount found or assessed."); *i4i Ltd. P'ship v. Microsoft Corp.*, 598 F.3d 831, 858 (Fed. Cir. 2010) ("A finding of willful infringement is a prerequisite to the award of enhanced damages.") (citing *In re Seagate Tech., LLC.*, 497 F.3d 1360, 1368 (Fed. Cir. 2007) (*en banc*)). Once a determination of willfulness has been made, "[t]he paramount determination in deciding to grant enhancement and the amount thereof is the egregiousness of the defendant's conduct based on all the facts and circumstances." *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 826 (Fed. Cir. 1992).

Here, the district court did not consider whether and to what extent enhancement should be awarded, instead ruling that the circumstances did not satisfy the threshold willfulness requirement. A26-27. In doing so, however, the district court did not evaluate Nova's *post-judgment* conduct—at which point Nova was an adjudged infringer—but instead relied exclusively on its ruling that Nova's *pre-judgment* infringement was not willful. *Id.* That was legal error, as a determination of pre-judgment willfulness is not a prerequisite to a determination of post-judgment willfulness.

There is a "fundamental difference" between damages for "pre-verdict infringement and damages for post-verdict infringement," *Amado*, 517 F.3d at

1361, and thus "the fact that [a defendant] is an adjudged infringer who chooses to continue infringing simply cannot be ignored," *Paice LLC v. Toyota Motor Corp.*, 609 F. Supp. 2d 620, 630 (E.D. Tex. 2009); *see Paice LLC v. Toyota Motor Corp.*, 504 F.3d 1293, 1317 (Fed. Cir. 2007) (Rader, J., concurring) ("[P]re-suit and post-judgment acts of infringement are distinct…."). Indeed, "absent unusual circumstances … a defendant is acting in the face of an unjustifiable high risk of harm if it continues to infringe in light of a jury verdict and judgment of infringement." *Mondis Tech. Ltd. v. Chimei InnoLux Corp.*, 822 F. Supp. 2d 639, 652 (E.D. Tex. 2011), *aff'd*, 530 F. App'x 959 (Fed. Cir. 2013) (per curiam); *see Internet Machines LLC v. Alienware Corp.*, 2013 WL 4056282, *20 (E.D. Tex. June 19, 2013) ("'Following a jury verdict and entry of judgment of infringement…, a defendant's continued infringement will be willful absent very unusual circumstances'") (quoting *Affinity Labs of Tex., LLC v. BMW N. Am., LLC*, 783 F. Supp. 2d 891, 899 (E.D. Tex. 2011)), *aff'd*, 2014 WL 3892903 (Fed. Cir. Aug. 11, 2014) (per curiam).

Numerous courts thus have awarded enhanced damages for post-judgment infringement in the absence of pre-judgment willfulness. *See Internet Machines*, 2013 WL 4056282, at *20-21 (enhancing damages for post-verdict infringement where there was determination of *no willfulness* for pre-judgment infringement); *Mondis*, 822 F. Supp. 2d at 649-53 (same); *see also Synqor, Inc. v. Artesyn Techs.*,

Inc., 709 F.3d 1365, 1385 (Fed. Cir. 2013) (affirming enhanced supplemental damages, where no pre-verdict finding on willfulness but "Defendants' conduct [was] 'egregious[]' in continuing, and even increasing, sales in the face of an infringement verdict"); *I/P Engine, Inc. v. AOL Inc.*, 2014 WL 309245 (E.D. Va. Jan. 28, 2014) (post-verdict infringement willful, where no pre-verdict finding on willfulness); *Cummins-Allison Corp. v. SBM Co.*, 669 F. Supp. 2d 774, 780-81 (E.D. Tex. 2009) (same).

Here, there were no unusual circumstances that would make Nova's voluntary and intentional decision to continue infringing after the judgment anything other than willful. Rather, Nova made a calculated decision—in the face of an adverse judgment and rejection of all of its defenses—to seek to grow its business for the infringing SURPASS products, and it in fact grew that business to *record* levels (A14195; A14018; A12310; *see supra*, at 21). This reckless disregard for Dow's patent rights by an adjudicated infringer was willful as a matter of law. *See, e.g., Synqor*, 709 F.3d at 1385 (infringement willful where defendant increased sales of infringing product post-verdict); *Mondis*, 822 F. Supp. 2d at 651 (rejecting argument that infringement during pending appeal was not willful as "lack[ing] … respect for the jury's verdict or this Court's judgment" and "contrary to the common law usage of willfulness"); *cf. Stryker Corp. v. Davol, Inc.*, 75 F. Supp. 2d 746, 748 (W.D. Mich. 1999) ("[T]he hypothetical possibility

that [a post-trial motion] might be granted was clearly insufficient to support a good faith belief that continuing sales of the [product] were not infringing."), *aff'd*, 234 F.3d 1252, 1259-60 (Fed. Cir. 2000).

A remand is therefore necessary so that the district court can determine whether and to what extent enhancement is warranted.[24]

CONCLUSION

The judgment should be affirmed except to the extent it denied enhanced supplemental damages, that portion of the judgment should be vacated, and the case should be remanded for further proceedings on enhancement.

Dated: October 6, 2014

Respectfully submitted,

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[24] The *Read* factors support a substantial enhancement of damages given: (1) Nova's size and financial condition; (2) the extensive duration of Nova's misconduct; (3) the lack of remedial action by Nova even after notification of infringement; and (4) Nova's motivation to harm Dow by making a clone of ELITE and targeting the same type of customers as Dow. *See* 970 F.2d at 826-27.

PROOF OF SERVICE

The undersigned hereby certifies that on October 14, 2014, I caused the foregoing CORRECTED BRIEF FOR PLAINTIFF-CROSS APPELLANT to be electronically filed with the Clerk of the Court for the United States Court of Appeals for the Federal Circuit by using the appellate CM/ECF system. I certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the CM/ECF system.

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CERTIFICATE OF COMPLIANCE

Counsel for Plaintiffs-Cross Appellant hereby certifies that:

1. The brief complies with the type-volume limitation of Federal Rule of Appellate Procedure 28.1(e)(2)(B)(i) because exclusive of the exempted portions it contains 16,500 words as counted by the word processing program used to prepare the brief; and

2. The brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and the type-style requirements of Federal Rule of Appellate Procedure 32(a)(6) because it has been prepared using Microsoft Office Word 2007 in a proportionately spaced typeface: Times New Roman, font size 14.

Dated: October 6, 2014

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