NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

CANOPY GROWTH CORPORATION,
Plaintiff-Appellant

v.

GW PHARMA LIMITED, GW RESEARCH LIMITED,
Defendants-Appellees

2022-1603

Appeal from the United States District Court for the Western District of Texas in No. 6:20-cv-01180-ADA, Judge Alan D. Albright.

Decided: April 24, 2023

DAVID G. WILLE, Baker Botts LLP, Dallas, TX, argued for plaintiff-appellant. Also represented by MELISSA MUENKS, KURT M. PANKRATZ, CLARKE STAVINOHA; MICHAEL HAWES, Houston, TX.

GERALD J. FLATTMANN, JR., Cahill Gordon & Reindel LLP, New York, NY, argued for defendants-appellees. Also represented by JESSE SNYDER, AMY R. UPSHAW, King & Spalding LLP, Washington, DC.

Before LOURIE, TARANTO, and STARK, *Circuit Judges*.

TARANTO, *Circuit Judge*.

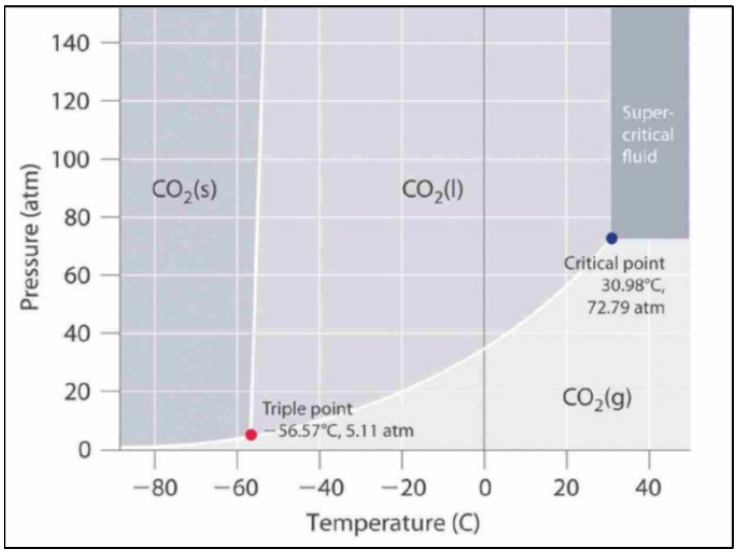
Canopy Growth Corp. sued GW Pharma Ltd. and GW Research Ltd. (collectively, GW) in the United States District Court for the Western District of Texas, alleging infringement of at least claims 1–25 of its U.S. Patent No. 10,870,632. The district court issued an order construing the sole disputed claim limitation: "CO_2 in liquefied form under subcritical pressure and temperature conditions." *Canopy Growth Corp. v. GW Pharmaceuticals PLC*, No. 20-cv-01180, 2021 WL 8015834, at *4–15 (W.D. Tex. Nov. 27, 2021). Based on the district court's construction, the parties stipulated to non-infringement, and the court then entered final judgment in favor of GW on infringement and dismissed GW's remaining affirmative defenses and counterclaims without prejudice. Canopy appeals. Because the phrase "subcritical pressure and temperature conditions," as used in the claims here, requires both pressure and temperature to be subcritical, we affirm.

I

The '632 patent describes and claims processes for producing an extract containing tetrahydrocannabinol (THC) and/or cannabidiol (CBD) from cannabis using liquid carbon dioxide (*i.e.*, CO_2). CO_2 can exist in the solid, liquid, and gas phases. But when temperature and pressure are high enough, CO_2 can transition from the liquid or gas phase into a supercritical fluid state. The lowest combination of temperature and pressure at which this transition can occur is the critical point; only if both temperature *and* pressure are above the critical point will CO_2 enter the supercritical fluid state.

CO_2 can be described as *sub*critical when either its temperature *or* its pressure is below the critical point, and, putting aside its solid phase (which is not relevant here), CO_2

can be in the subcritical state as either a liquid or a gas, depending on the specific temperature and pressure of the CO_2. When its temperature is supercritical but its pressure is subcritical, CO_2 will form a gas because the pressure is not sufficient to force the CO_2—expanding due to the high temperature—to liquify. In contrast, when its temperature is subcritical but its pressure is supercritical, the CO_2 will form a liquid. And when both temperature and pressure are subcritical, CO_2 can form either a liquid or a gas, depending on the specific temperature and pressure. The critical-point temperature for CO_2 is 31°C, and the critical-point pressure for CO_2 is 73.8 bar (or 72.8 atm). The parties do not dispute any of those principles, which are depicted in the CO_2 phase diagram below.[1]



[1] Canopy contends in its reply brief that "[t]he presence of impurities in the CO_2 can result in liquefied CO_2 at a temperature above what is generally understood as the critical temperature of CO_2." Reply Br. at 3 n.1 (citing J.A. 1215). Neither the document Canopy cites nor the argument Canopy makes appears in Canopy's briefing before

J.A. 90.

Independent claim 1 of the '632 patent recites

> 1. A process for producing an extract containing Tetrahydrocannabinol (THC) and/or cannabidiol (CBD), and optionally the carboxylic acids thereof, from a *cannabis* plant material or a primary extract thereof, said process comprising:
>
> (1) subjecting the *cannabis* plant material or primary extract thereof to **CO_2 in liquefied form under subcritical pressure and temperature conditions** to extract cannabinoid components; and
>
> (2) reducing the pressure and/or temperature to separate tetrahydrocannabinol and/or cannabidiol, and optionally the carboxylic acids thereof, from the CO_2.

'632 patent, col. 14, lines 30–41 (bolding added for emphasis). The only other independent claim, claim 14, is relevantly similar, and all claims of the '632 patent include the limitation at issue.

The '632 patent's specification lists the phrase at issue among itemized temperature and pressure conditions for

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the district court, notwithstanding GW's argument before the district court that CO_2 is a gas under these conditions. Even if this court could take judicial notice of the document for its content, which has not been requested or justified, Canopy has doubly forfeited this argument. *See In re Google Technology Holdings LLC*, 980 F.3d 858, 863 (Fed. Cir. 2020) (arguments not presented to the reviewed tribunal are generally forfeited); *Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1332–33 (Fed. Cir. 2012) (arguments not raised before us until reply briefing are forfeited).

CO_2 that are "[i]n accordance with the invention." *Id.*, col. 5, lines 6–20. Specifically, it provides that extraction can occur

> with the aid of CO_2 under supercritical pressure and temperature conditions at a temperature in the range of approx[.] 31° C. to 80° C. and at a pressure in the range of approx. 75 bar to 500 bar, or in the subcri[t]i[c]al range at a temperature of approx. 20° C. to 30° C. and a supercritical pressure of approx. 100 bar to 350 bar; or extracted under subcri[t]i[c]al pressure and temperature conditions; and the obtained primary extract is separated under subcri[t]i[c]al conditions, or under conditions that are subcri[t]i[c]al in terms of pressure and supercritical in terms of temperature.

Id.

The limitation at issue, with the other possible CO_2 conditions quoted above, also appears in the prosecution history. The '632 patent issued from a continuation of Application No. 10/399,362. During prosecution of that application, the applicant sought claims to these conditions in a claimed process that it described as reciting three "alternative steps," J.A. 372 (emphasis omitted), depicted below:

15. (Currently amended) A process for producing an extract containing tetrahydrocannabinol, cannabidiol and optionally the carboxylic acids thereof from dried comminuted Cannabis plant material, comprising

- extracting said plant material by means of CO_2

(a) under supercritical pressure and temperature conditions at a temperature in a range of approx. 31°C to 80°C and at a pressure in a range of approx. 75 bar or 500 bar, or

(b) in liquefied form in the subcritical ~~subericital~~ range at a temperature of approx. 20°C to 30°C and a supercritical pressure of approx. 100 bar to 350 bar; or

(c) in liquefied form under subcritical ~~subericital~~ pressure and temperature conditions; and

- separating the obtained primary extract out under subcritical ~~subericital~~ conditions or under conditions subcritical ~~subericital~~ in terms of pressure and supercritical in terms of temperature.

J.A. 366. As described by the applicant during prosecution, these alternative steps permitted extraction via CO_2 under

"(a) supercritical pressure and temperature conditions; or (b) subcritical temperature range and a supercritical pressure; or (c) subcritical pressure and temperature conditions." J.A. 372–73. The '362 application issued with claims directed to these steps as U.S. Patent No. 8,895,078.

For the application that gave rise to the '632 patent, Application No. 14/276,165, the prosecution history starts off similarly, in that the applicant began by seeking claims directed to the same three alternative steps. J.A. 399. But in response to an examiner rejection of the claims over prior art that discloses the use of supercritical fluid CO_2 for extraction, Webster (U.S. Patent No. 6,403,126), J.A. 404–05, the applicant amended the pending claims to remove the first of the alternative steps—"under supercritical pressure and temperature conditions at a temperature in a range of approx. 31°C to 80°C and at a pressure in a range of approx. 75 bar or 500 bar," J.A. 420. Then, in response to the examiner's continued rejection based on Webster's disclosure of supercritical fluid CO_2 and Webster's statement that temperature and pressure can be adjusted, J.A. 431–33; J.A.445–48, the applicant amended the claims to also remove the second alternative step—"in liquefied form in the subcritical range at a temperature of approx. 20°C to 30°C and a supercritical pressure of approx. 100 bar to 350 bar," J.A. 437. This amendment left the applicant with claims directed only to the third of the alternative steps—"in liquefied form under subcritical pressure and temperature conditions," though further limited through amendment to "a pressure of 70 bar or less and a temperature of approx. 20°C to 30°C." *Id.* The applicant ultimately canceled the claims, J.A. 152, but the issued claims now in dispute include this same phrase (without the numerical pressure and temperature limits).

The district court concluded that the phrase, "CO_2 in liquefied form under subcritical pressure and temperature conditions," requires that both the pressure and temperature be subcritical. *Canopy*, 2021 WL 8015834, at *15. The

court relied on the claim's use of "and" instead of "or," which it viewed as indicating that the claim required both pressure and temperature to be subcritical. *Id.* at *4. The court concluded that the use of "conditions" (a plural) does nothing to change this. *Id.* Looking next to the specification, the court viewed the above-quoted passage, in column 5, as listing three alternative options, rejecting Canopy's argument that the second, which includes subcritical temperature and supercritical pressure, is a subset of the third, which is defined by the "subcritical pressure and temperature conditions" phrase at issue. *Id.* at *8–10. Finally, the court viewed the prosecution history as not "provid[ing] any additional insight . . . beyond the plain language of the claims and the specification." *Id.* at *14. The prosecution history statements, the court determined, "mirror those in the specification, namely, that the claims in the parent patent and the as-filed/amended claims in the asserted patent recite three pressure and temperature conditions." *Id.* The court likewise deemed extrinsic evidence, involving the use of similar but notably different phrases, to be "not directly relevant" and not sufficient to "outweigh the intrinsic evidence." *Id.* at *15.

The district court entered final judgment, following the parties' stipulation to non-infringement, on February 25, 2022. Canopy timely appealed on March 24, 2022. *See* 28 U.S.C. § 2107(a); Fed. R. App. P. 4(a)(1)(A). We have jurisdiction under 28 U.S.C. § 1295(a)(1).

II

"[T]here is no magic formula or catechism for conducting claim construction." *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 809 (Fed. Cir. 2021) (alteration in original) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1324 (Fed. Cir. 2005) (en banc)). But

> [w]e generally give words of a claim their ordinary meaning in the context of the claim and the whole patent document; the specification particularly,

> but also the prosecution history, informs the determination of claim meaning in context, including by resolving ambiguities; and even if the meaning is plain on the face of the claim language, the patentee can, by acting with sufficient clarity, disclaim such a plain meaning or prescribe a special definition.

SIMO Holdings Inc. v. Hong Kong uCloudlink Network Technology Ltd., 983 F.3d 1367, 1374 (Fed. Cir. 2021) (alteration in original) (quoting *World Class Technology Corp. v. Ormo Corp.*, 769 F.3d 1120, 1123 (Fed. Cir. 2014)). That undertaking is ultimately one of law, for us to make de novo. *Intel Corp.*, 21 F.4th at 808. But sometimes there are underlying determinations of fact, concerning usage or other matters extrinsic to the patent, and we review such determinations for clear error. *Id.*

The ordinary meaning of "subcritical pressure and temperature conditions" favors the construction advanced by GW and accepted by the district court. In that phrase, with its use of "and," the term "subcritical" operates most plainly as a prepositive modifier that modifies either both "pressure" and "temperature" or both "pressure conditions" and "temperature conditions." We have held that the ordinary construction of language such as this reads the "prepositive . . . modifier [as] normally appl[ying] to the entire series." *SIMO Holdings*, 983 F.3d at 1377 (quoting Antonin Scalia & Bryan A. Garner, Reading Law: The Interpretation of Legal Texts § 19, at 147 (2012)). Thus, the ordinary meaning is that both pressure and temperature must be subcritical for the limitation to be satisfied. *See id.*

Canopy disagrees. It contends that the patent discloses two embodiments, one in which CO_2 has both supercritical pressure and temperature, which it opted not to claim, and one in which either the temperature or pressure of CO_2 (or both) are subcritical, part of which the district court excluded without sufficient reason. It offers a construction

that it contends is "reasonabl[e]" and captures the full scope of this purported second embodiment—one in which the phrase "pressure and temperature" is read as a unit modifying "conditions" in such a way that it means a combination of "pressure and temperature conditions" that is subcritical. For support beyond the claim language, Canopy argues that no evidence suggests that a person of ordinary skill in the art would have reason to distinguish between liquid CO_2 with both subcritical pressure and temperature and liquid CO_2 with subcritical temperature and supercritical pressure, as both are subcritical and functionally indistinct.

But we need not decide whether that substantive scientific context would be enough in another case to overcome the ordinary English-language meaning of "subcritical pressure and temperature conditions." Nor need we decide whether one might consider Canopy's reading of the claim "reasonable." Here, the prosecution history forecloses Canopy's construction and two-embodiment reading.

During prosecution, Canopy clearly sought claims directed to three alternatives, not two: (1) supercritical fluid CO_2, (2) CO_2 with subcritical temperature and supercritical pressure, and (3) CO_2 with subcritical pressure and temperature conditions. J.A. 399; *see also* J.A. 366. Canopy sequentially deleted the first and second sets of conditions from the initially sought claims, J.A. 420; J.A. 437, and ultimately claimed only the third set of conditions. And that third set of conditions must be limited to having both subcritical temperature and subcritical pressure because, if the third set included CO_2 with subcritical temperature and supercritical pressure, then it would entirely subsume the second initially claimed condition set, rendering that set superfluous. *See Intel Corp.*, 21 F.4th at 810 ("It is highly disfavored to construe terms in a way that renders them void, meaningless, or superfluous." (quoting *Wasica Finance GmbH v. Continental Automotive Systems,*

Inc., 853 F.3d 1272, 1288 n.10 (Fed. Cir. 2017))); *see also* Scalia & Garner, Reading Law § 26, at 174 ("If possible, every word and every provision is to be given effect."). Canopy nevertheless contends that the initially claimed alternatives were not mutually exclusive alternatives but were instead akin to a "Markush" group. But that characterization does not overcome the problem that the third set of conditions, understood as Canopy proposes, would subsume the second. Each member of a Markush group is covered by the group, so there is no reason to include an alternative in a Markush group that falls entirely within another alternative. *See Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1357 (Fed. Cir. 2016) (describing Markush groups).

This prosecution history clarifies the meaning of the claim language both directly and, by clarifying the specification's disclosures, indirectly. The specification, like the claims sought earlier in prosecution, lists the three alternative condition sets, but it does so with various transition phrases, commas, and semicolons that leave its proper parsing less than clear. *See* '632 patent, col. 5, lines 6–20.[2]

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[2] As detailed above, the specification states that, "[i]n accordance with the invention," extraction can occur

> with the aid of CO_2 under supercritical pressure and temperature conditions at a temperature in the range of approx[.] 31° C. to 80° C. and at a pressure in the range of approx. 75 bar to 500 bar, or in the subcri[t]i[c]al range at a temperature of approx. 20° C. to 30° C. and a supercritical pressure of approx. 100 bar to 350 bar; or extracted under subcri[t]i[c]al pressure and temperature conditions; and the obtained primary extract is separated under subcri[t]i[c]al conditions, or under

The prosecution history clarifies that, contrary to Canopy's two-embodiment reading (in which the "subcritical [temperature] range . . . and supercritical pressure" is a subset of "subcritical pressure and temperature conditions," Opening Br. at 10–11 (characterizing the former as an example of the latter)), this passage discloses three distinct embodiments, and the claims recite only one of them.

Canopy argues that we should disregard this history because the relevant amendments were to claims that were ultimately cancelled and replaced. Reply Br. at 24 (citing *Massachusetts Institute of Technology v. Shire Pharmaceuticals, Inc.*, 839 F.3d 1111, 1120–22 (Fed. Cir. 2016), for the proposition that statements made relating to cancelled claims should be discounted). But the same phrase present in the now-cancelled claims is the now-at-issue phrase recited in the issued claims. In the prosecution history associated with the phrase, Canopy made clear that it encompasses only CO_2 with both subcritical pressure and subcritical temperature, as explained above.

Canopy also argues that the amendments do not amount to disclaimer or disavowal and therefore cannot justify a construction that excludes an embodiment. Canopy notes that, before cancellation, the claims recited specific numerical ranges of pressure and temperature, in addition to the phrase at issue, and that the issued independent claims omit the specific numerical ranges. But we need not decide whether the amendments here amount to disavowal or disclaimer because we need not find disavowal or disclaimer to conclude, based on a review of the prosecution history, that Canopy chose to claim only one of three options. *See University of Massachusetts v. L'Oreal*

> conditions that are subcri[t]i[c]al in terms of pressure and supercritical in terms of temperature.

'632 patent, col. 5, lines 6–20.

S.A., 36 F.4th 1374, 1379 (Fed. Cir. 2022) ("The prosecution history, in particular, may be critical in interpreting disputed claim terms, and even where prosecution history statements do not rise to the level of unmistakable disavowal, they do inform the claim construction." (internal quotation marks omitted) (quoting *Personalized Media Communications, LLC v. Apple Inc.*, 952 F.3d 1336, 1345 (Fed. Cir. 2020))). To be sure, constructions that read out embodiments are sometimes wrong. *See Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008) ("We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification."); *SIMO Holdings*, 983 F.3d at 1378–79 (explaining the limited reach of the language from *Oatey*, properly understood). Here, though, the plain language of the claims, along with the prosecution history and the specification viewed in light of the prosecution history, make clear that the '632 patent discloses three non-overlapping embodiments while claiming only one of them: the one in which pressure and temperature both must be subcritical.

Canopy's other arguments are also unavailing. Canopy contends, for example, that the district court's inclusion of "both" in its construction somehow rewrites the claim. But to achieve the object of definition or clarification, it is typical in presenting a clarifying interpretation that one uses expressions absent from the interpreted language itself. Canopy also points to extrinsic evidence, citing references that use phrases that are somewhat similar to the phrase at issue here. Opening Br. at 37–38 (citing use of the phrases "subcritical conditions," "subcritical and supercritical conditions," and "a subcritical CO_2 process" (quoting J.A. 161, J.A. 172–73, J.A. 177, and J.A. 192, respectively)). But these phrases all involve "subcritical" clearly modifying either "conditions" or "process," whereas here, the very dispute turns on what "subcritical" modifies in the claim language, and the district court did not clearly err in deeming the evidence not directly relevant.

III

For the foregoing reasons, we affirm the district court's claim construction order and entry of final judgment of non-infringement in favor of GW.

AFFIRMED